Service Manual

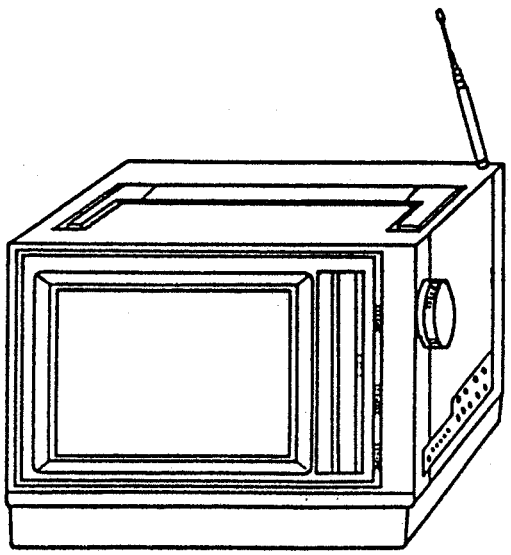
Nachdruck bzw. Kopieren dieser Unterlagen ist grundsätzlich verboten!

COLOR-TV UHF/VHF

PAL/Secam

ORION

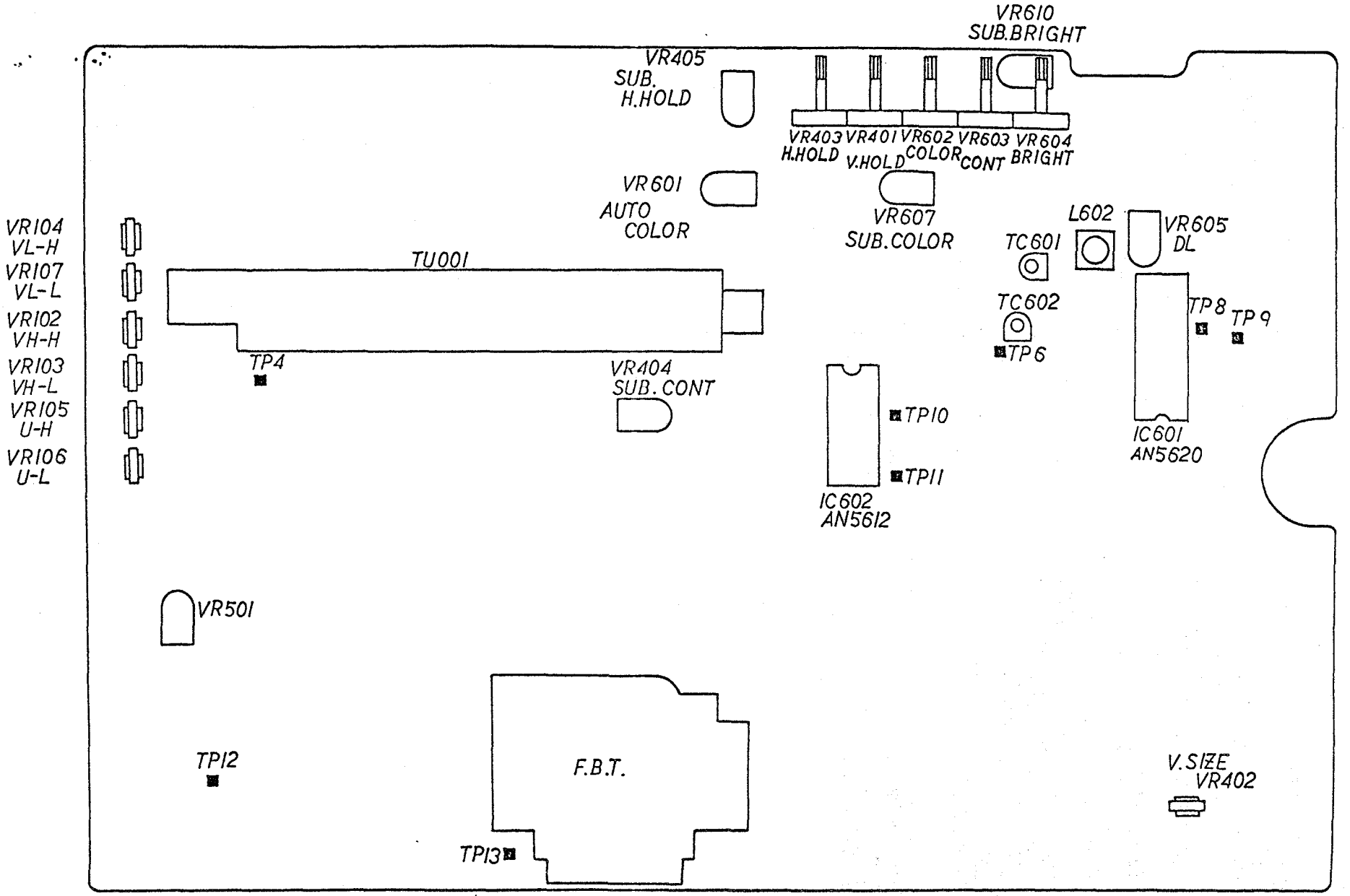
MODEL CTV-513

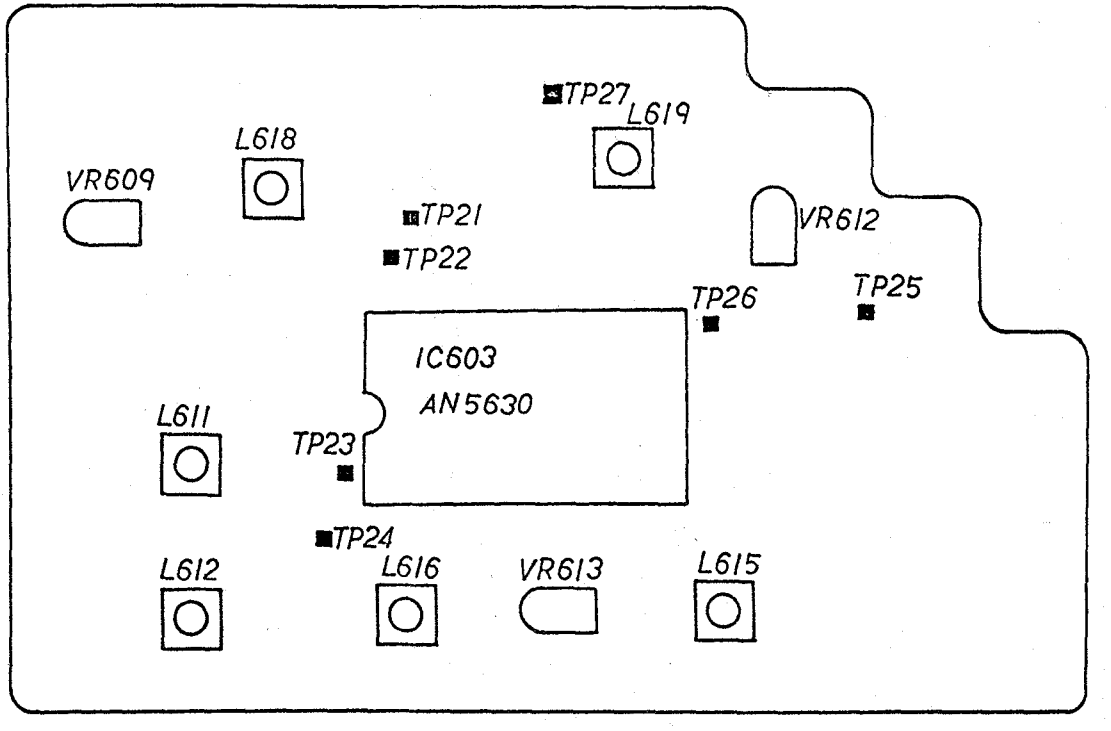


Specifications are subject to change without notice

ELECTRICAL SPECIFICATIONS

PICTURE SIZE	10 inch
SYSTEM	PAL/SECAM
FREQUENCY RANGE: VHF(L)	2 - 4 ch, 47 - 68 MHz
: VHF(H)	5 - 12 ch, 174 - 230 MHz
: UHF	21 - 69 ch, 470 - 862 MHz
MAXIMUM SENSITIVITY: VHF	25 dB (C.R.T. Cathode 10Vp-p)
: UHF	30 dB
INTERMEDIATE FREQUENCY:	
Picture IF Carrier Frequency	38.9 MHz
Color Sub Carrier Frequency	34.47 MHz
Sound IF Carrier Frequency	33.4 MHz
SOUND INTERMEDIATE FREQUENCY	5.5 MHz
MAXIMUM OUTPUT POWER	0.35 W
10% THD OUTPUT POWER	0.3 W
SPEAKER	32 ohm
POWER SOURCE	AC 220V
IC	8
TRANSISTOR	23
DIODE	15
TV TUNER PACK	1


VR610
SUB.BRIGHT
VR405
SUB.
H.HOLD
VR403
H.HOLD
VR401
V.HOLD
VR602
COLOR
VR603
CONT
VR604
BRIGHT
VR601
AUTO
COLOR
VR607
SUB.COLOR
L602
VR605
DL
TC601
TC602
TP6
TP8
TP9
VR104
VL-H
VR107
VL-L
VR102
VH-H
VR103
VH-L
VR105
U-H
VR106
U-L
TU001
TP4
VR404
SUB. CONT
TP10
TP11
IC602
AN5612
IC601
AN5620
VR501
TP12
F.B.T.
TP13
V.SIZE
VR402


TP27
L619
L618
VR609
TP21
TP22
VR612
TP26
TP25
IC603
AN5630
L611
TP23
TP24
L612
L616
VR613
L615

SHUT DOWN CIRCUIT

When the high voltage rises, there are simultaneous voltage increased developed at terminal 6 of the Horizontal Output Transformer(FB401) and applied to pin 4 of IC401. If excessive high voltage is produced, the increased voltage developed exceeds the rating of zener diode D406 causing the Horizontal Oscillator to stop functioning and the high voltage system is then shut down.

VERTICAL SIZE ADJUSTMENT

Adjust the control (VR402) so that the picture fills the picture opening from top to bottom and is proportionate to the width.

FOCUS ADJUSTMENT

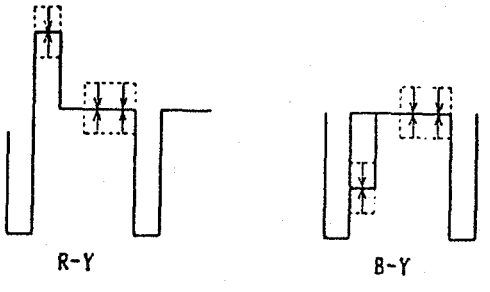
Adjust focus control, on the flyback transformer, for fine picture.

APC ADJUSTMENT

1. Receive the signal of color bar.
2. Connect voltmeter between TP8 and TP9.
3. Set TC602 to center position.
4. Adjust TC601 to obtain a minimum voltage reading.

HUE DELAY ADJUSTMENT

1. Receive the signal of DEM pattern.
2. Connect dual oscilloscope to TP10 and TP11.
3. Adjust waveform to straight line with L602, VR605 and TC602.



SUB H-HOLD AND H-HOLD ADJUSTMENT

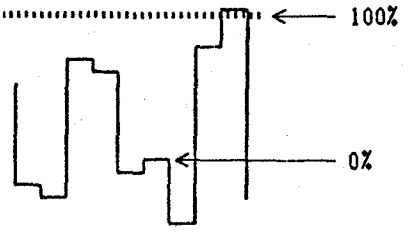
1. Receive the snowy station (free-run).
2. Connect frequency counter to CRT heater.
3. Rotate H-Hold control fully counter-clockwise.
4. Adjust VR405 to obtain 14200 Hz reading.
5. Receive the signal of test pattern.
6. Adjust H-Hold control (VR403) to obtain 15625 Hz reading.

+10.5V ADJUSTMENT

1. Connect the positive side of the voltmeter to TP13 and the negative one to the chassis ground.
2. Adjust the voltmeter to 10.5V with VR501.

COLOR LEVEL ADJUSTMENT

1. Receive the signal of color bar.
2. Set auto switch to on position.
3. Connect oscilloscope to TP14.
4. Adjust color level to 75% with VR601.



SUB BRIGHT ADJUSTMENT

1. Connect Color Bar Generator to antenna terminals.
2. Set Auto Color switch to OFF position.
3. Set Contrast (VR603) control to maximum position and Brightness (VR604) control to minimum position.
4. Adjust Sub Bright (VR610) control to obtain a dim pattern.

SUB CONTRAST ADJUSTMENT

1. Connect Color Bar Generator to antenna terminals.
2. Set Contrast (VR603) and Brightness (VR604) controls to maximum position.
3. Set Auto Color switch to OFF position.
4. Adjust Sub Contrast (VR404) control for average gray scale.

TV COVERAGE ADJUSTMENT

Normally, this type of adjustment should not be required unless components have been replaced in the TV tuning circuitry.

VHF-L (Channel 2 through 4) ... Carefully tune in the highest received channel in this band. If the channel number on the dial is not so close to the indicator marker, adjust VR104 so that the highest tuning margin point and the marker position are synchronous. Carefully tune in the lowest received channel in this band. If this channel number on the dial is not so close to the indicator marker, adjust VR107 so that the lowest tuning margin point and the marker position are syncronous. Then, carefully tune in all received channels in this band and check for proper dial calibration. It may be necessary to readjust VR104 and VR107 to obtain optimum results.

VHF-H (Channel 5 through 12) ... Proceed in the same manner as discribed for VHF-L, except adjust VR102 for high end and VR103 for low end calibrations.

UHF (Channel 21 through 69) ... Proceed in the same manner as discrebed for VHF-L, except adjust VR105 for high end and VR106 for low end calibrations.

BLACK AND WHITE TRACKING

The purpose of this procedure is to adjust the biases applied to the picture tube to obtain good black and white picture production at all brightness levels while, at the same time achieving maximum useable brightness. Proper RF AGC control adjustment have been verified prior to performing this procedure.

1. With antenna connected to the receiver, tune in picture on a strong received channel. Depress AFC knob to OFF position. Rotate the Color control to maximum CCW position and misadjust the tuning control so that receiver will not produce a color picture while the following adjustment are being performed.
2. Rotate the Red and Blue Drive control fulley CW and then back CCW center of their rotation ranges.
3. Rotate the Green, Red and Blue Bias controls to the full CCW end of their rotation ranges.
4. Set normal-service switch to service position. Adjust the voltage of test point (collector of green output transistor on CRT PCB) to DC 90V with brightness control. Voltage measurement should be measured with oscilloscope.
5. Rotate the screen control to the full CCW end of its rotation range.Then, rotate it CW until a dim line of one pronounced color (green, red or blue) is obtained.
6. The other two color bias controls must be rotated CW until a dim white line is obtained.
7. Set normal-service switch to normal position.
8. If required, touch-up adjustment of the Red and Blue Drive controls to produce a uniform monochrome picture.
9. Rotate the brightness andcontrast controls fully CCW.
10. Rotate the brightness control CW until a dim raster is obtained.
11. If the screen does not display good while uniformity, step 2 through 10 this procdure must be repeated.

STATIC CONVERGENCE ADJUSTMENT

1. Switch the Receiver ON and allow it to warm up for 15 minutes.
2. Connect the output of a Crosshatch Generator to the receiver and, concentrating on the center of the CRT screen, proceed as follows:

a. Locate a pair of 4 pole magnet rings. Rotate individual rings (change spacing between tabs) to converge the vertical red and blue lines. Rotate a pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue lines.

b. After completing red and blue center convergence, locate the pair of 6 pole magnet rings. Rotate individual rings (change spacing between tabs) to converge the vertical red and blue (magenta) and green lines. Rotate a pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue (magenta) and green lines.

COLOR PURITY ADJUSTMENT

The receiver must have been operating 10 minutes prior to this procedure and the face plate of the CRT must be at room temperature. The following procedure is recommended while using a Dot/Bar Generator.

1. Check for correct location of all neck components. (Refer to Figure 2.)
2. Rough-in the static convergence at the center of the CRT, as explained in the static convergence.
3. Rotate the contrast control to maximum CCW position and rotate brightness control as for CW as possible without causing the picture to "bloom".
4. Rotate the red bias and blue bias controls to maximum CCW position to produce a green raster.
5. Loosen the deflection yoke clamp screw and pull the deflection yoke toward the rear of the CRT.
6. Begin the following adjustment with the tabs on the round purity magnet rings set together, slowly separate the two tabs while at the same time rotating them to adjust for a uniform green stripe at the center of the CRT screen.
7. Carefully slide the deflection yoke forward to achieve green (uniform green screen).

NOTE: Center purity was obtained by adjusting the tabs on the round purity magnet rings, outer edge purity was obtained by sliding the deflection yoke forward.

8. Check for red and blue field purity by alternately increasing output of red and blue bias controls and touch up adjustments, if required.
9. Tighten deflection yoke clamp screw.

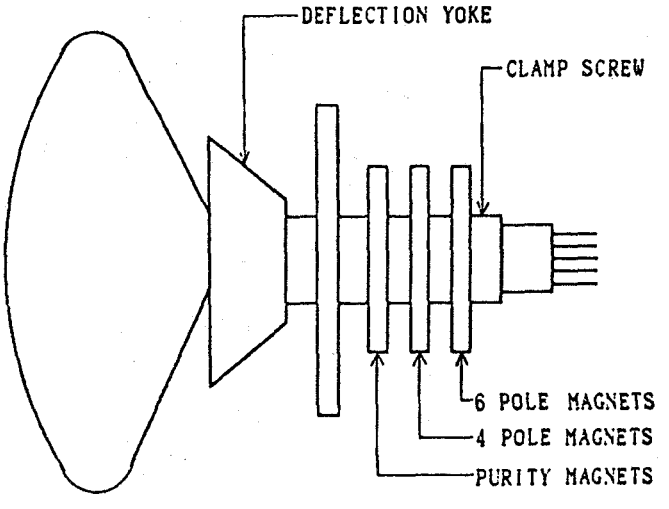


Figure 2. Picture Tube Neck Component Location

DYNAMIC CONVERGENCE ADJUSTMENT

Dynamic convergence (convergence of the three color fields at the edges of the CRT screen) is accomplished by proper insertion and positioning of three rubber wedge between the edge of the deflection yoke and the tunnel of the CRT.This is accomplished in the following manner

1. Switch the Receiver ON and allow it to warm up for 15 minutes.
2. Apply crosshatch pattern from Dot/Bar Generator to receiver. Observe spacing between lines around edges of CRT screen.
3. Tilt the deflection yoke up or down, and insert tilt adjustment wedges (1) and (2) between the deflection yoke and the CRT until the mis-convergence illustrated in Fugure 3 (A) has been corrected.
4. Tilt the deflection yoke right and left, and insert tilt adjustment wedge (3) between the deflection yoke and the CRT until the mis-convergence illustrated in Figure 3 (B) has been corrected.
5. Alternately change spacing between, and depth of insertion of the three wedges proper dynamic convergence is obtained.
6. Use a strong adhesive tape to firmly secure each of the three wedges to the funnel of the CRT.
7. Check purity and readjust, if necessary.

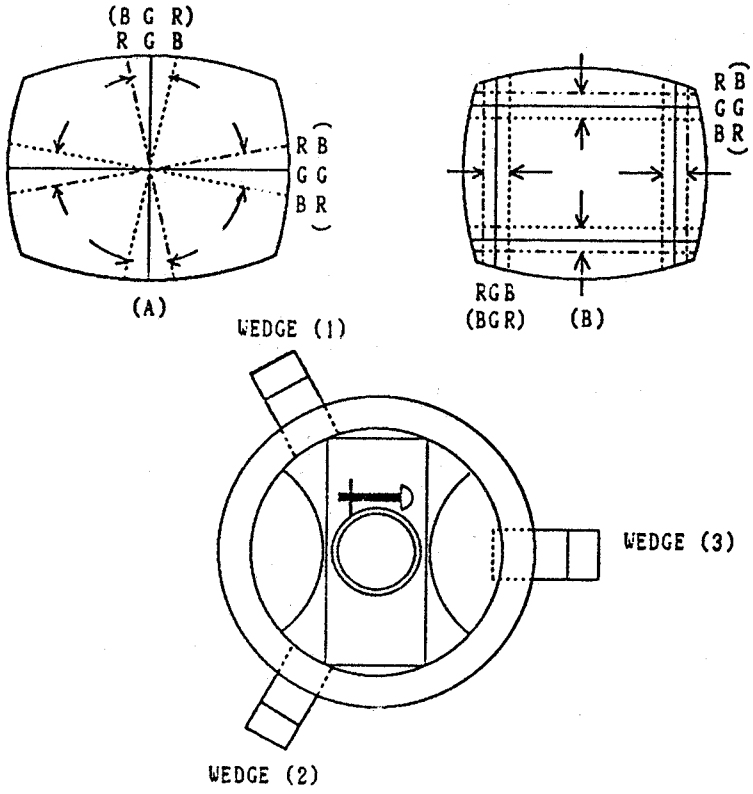
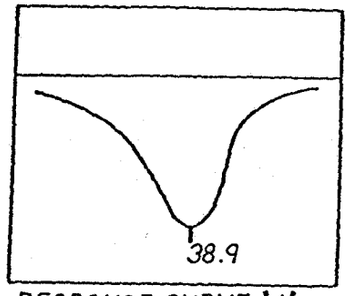


Figure 3 Dynamic Convergence Adjustment

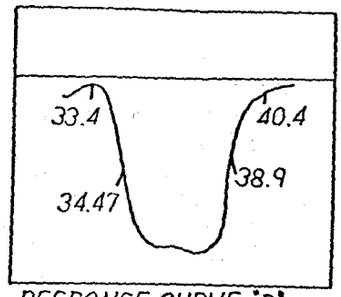
VIDEO IF ALIGNMENT

(Refer to Figure 5)
TEST EQUIPMENT CONNECTION
OSCILLOSCOPE .... Set AC-DC switch to AC position.
SWEEP-MARKER GENERATOR .... Connect H SCOPE and V SCOPE output cable from SWEEP-MARKER GENERATOR to H and V input connectors on OSCILLOSCOPE, connect red lead of SWEEP-MARKER OUTPUT cable to test point passed through condenser (0.0022) from the 16 th on IC (LA7503); connect black lead to chassis ground.
Connect yellow lead of SWEEP-MARKER INPUT cable to No.11 of 12 pin connector; black lead to chassis ground.

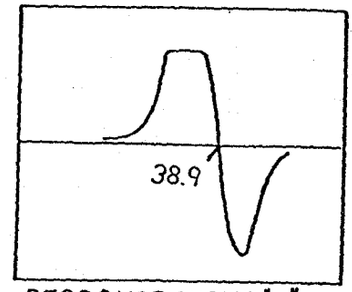
STEP	ADJUSTMENT	COMPONENT	PROCEDURE
1	Connect 10K ohm variable resistor between TP(AGC), +B to ground. Adjust AGC volume not to saturate.		
2	VIF X'fmr		Adjust VIF X'fmr to obtain maximum amplitude of response curve at 38.9 MHz. (Refer to Response Curve "A")
3	Connect 100 ohm resistor both and of VIF X'fmr. Connect red lead of SWEEP-MARKER GENERATOR OUTPUT cable to TV tuner TP.		
4	VIF X'fmr	IFT on TV	Alternately adjust IFT on TV tuner to obtain maximum amplitude of response curve. (Refer to Response Curve "B")
5	Disconnect variable resistor and 100 ohm resistor.		
6	Connect yellow lead of SWEEP-MARKER GENERATOR INPUT cable to TV tuner AFC TP on TV tuner		
7	AFT X'fmr		Adjust for zero crossover at 38.9 MHz. (Refer to Response Curve "C")



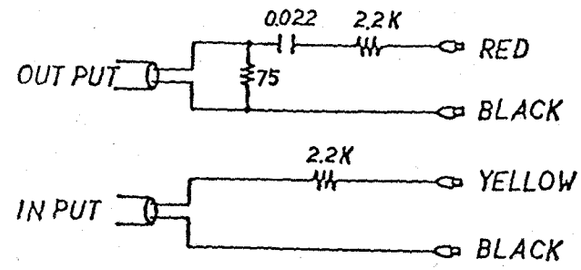
RESPONSE CURVE "A"



RESPONSE CURVE "B"



RESPONSE CURVE "C"



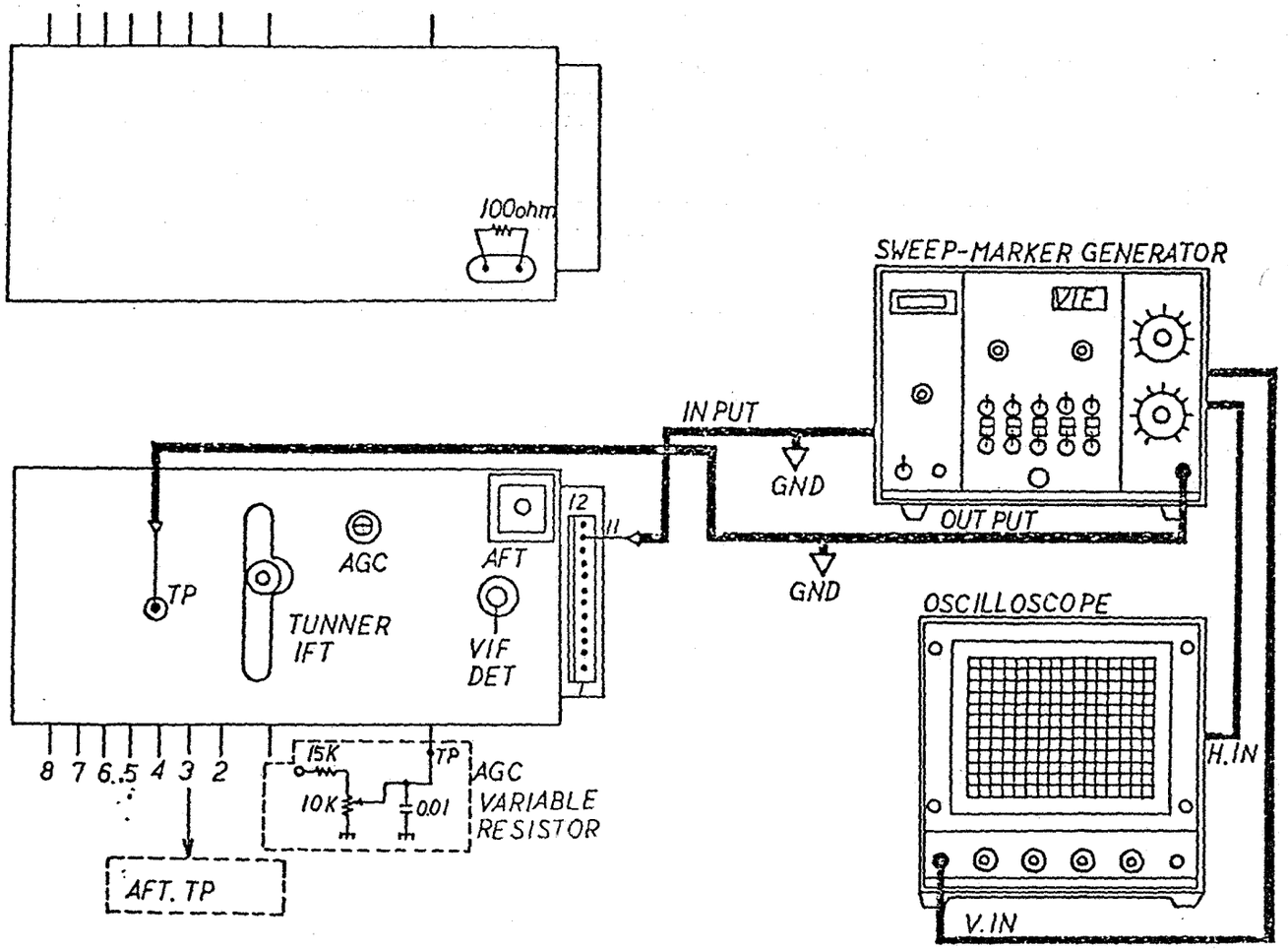
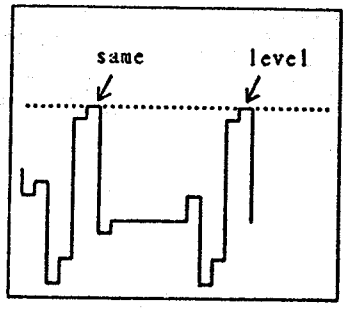


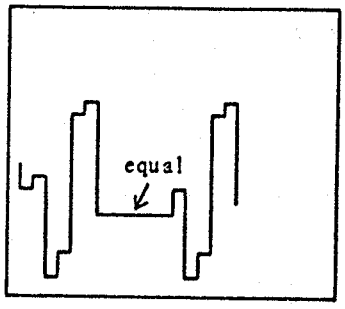
Figure 5

SECAM PHASE AND B-Y, R-Y LEVEL ADJUSTMENT

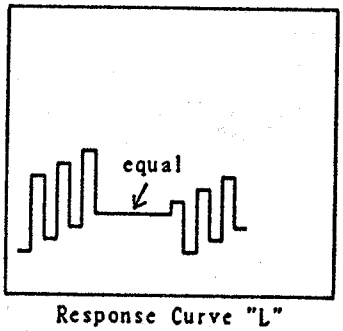
1. Receive the signal of color bar.
2. Connect voltmeter between No.1 to No.2 pin of IC603.
3. Adjust L616 to obtain a maximum reading.
4. Remove voltmeter between No.1 to No.2 pin of IC603.
5. Connect oscilloscope to TP26.
6. Adjust wave of oscilloscope to same level with VR609. (Refer to Response Curve "J")
7. adjust VR612 to obtain 1.2Vp-p. (Refer to Response Curve "K")
8. Adjust L619 so that connection part 1H and 1H is equal. (Refer to Response Curve "K")
9. Connect oscilloscope to TP11 from TP26.
10. Adjust VR613 to obtain 1.5Vp-p. (Refer to Response Curve "L")
11. Adjust L615 so that connection part 1H and 1H is equal. (Refer to Response Curve "L")



Response Curve "J"



Response Curve "K"

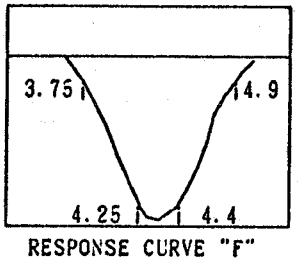


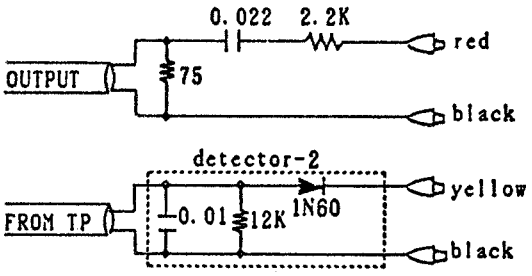
Response Curve "L"

SECAM CHROMA BANDPASS ALIGNMENT

(Refer to Figure 7)
TEST EQUIPMENT CONNECTION
GENERAL ... Set PAL-SECAM switch to SECAM position.
SWEEP-MARKER GENERATOR ... Connect H SCOPE and V SCOPE output cable from SWEEP-MARKER GENERATOR to H and V input connectors on OSCILLOSCOPE, connect red lead of SWEEP-MARKER GENERATOR OUTPUT cable to TP on TV tuner; connect black lead to chassis ground. Connect yellow lead of SWEEP-MARKER FROM TP cable (with detector-2 to TP22; connect black lead to TP21.

STEP	ADJUSTMENT	COMPONENT	PROCEDURE
1	Chroma B.P.F.	L618	Adjust L618 to obtain best overall response curve. (Refer to Response Curve "F")





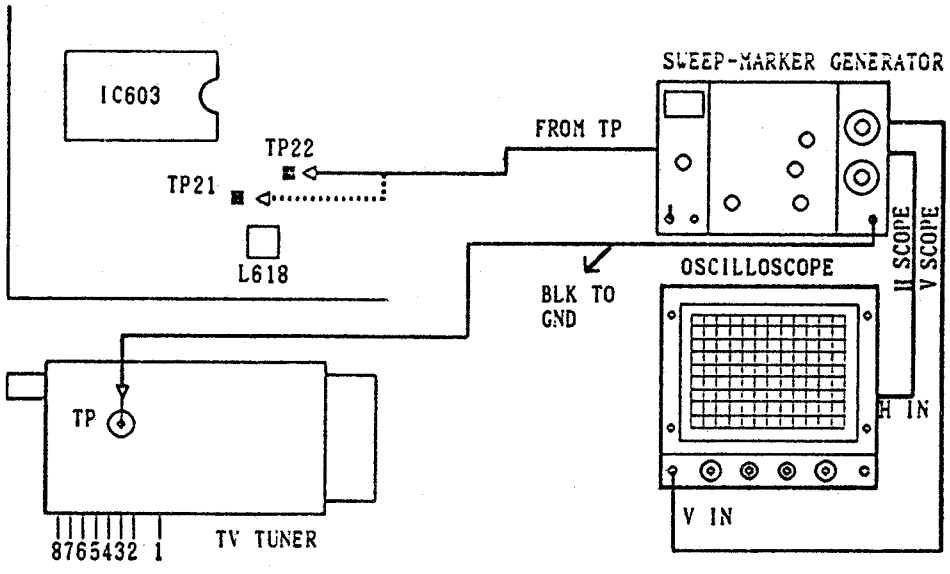
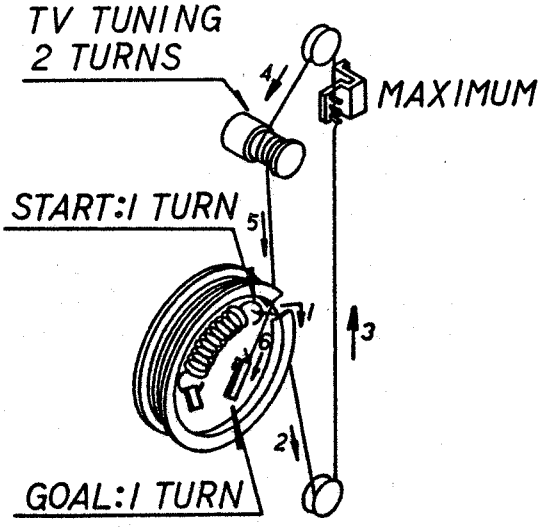


Figure 7. SECAM CHROMA BANDPASS ALIGNMENT

ROD. ANT.
PCB004
TU101
BU TU VH AGC VL AFT BM IF TP
VIF AMP
SAW FILTER
LA7503
VIF AGC
VIDEO DET
VIDEO AMP
INVER -TOR
LIMITTER AMP
AFC DET
RF AGC
VIDEO AMP
VIDEO BUFFER
VIDEO OUT
UPC1382C
SIF AMP
L.P.F.
DEF
ATT
DRIVER AMP
AMP
CURREN -T
10.6V
J350
SP350 35ohm
DL601
DL
VR609
VR612
L611
L613
L614
L612
L619
IC603 AN5630
L618
LIMITER AMP
P/S SW IH DL
PARTI-TATOR
DISCRIMI NATION
BUFFER P/S SW
L IDENT SAMPLING
L IDENT KILLYERT P/S IDENT H2 SAMPLING
VR613
L615
L616
PCB005
AUDIO OUT
AUDIO IN
VIDEO IN
SW701-2
TV
VIDEO
SW701-3
SW602
VR605
VR604-1 BRIGHT
VR610 SUB BRIGHT
VR408 ABL
IIV
IC601 AN5620X
ACC AMP
IH DL DRIVE
MATRIX KILL BLK
DEMOD
F.F
O S C
TC602
TC601
X601
Q701 VIF KILLER
Q703 VIDEO BUFFER
Q702 VIDEO AMP
PE601 B.P.F.
Q101 VL SW
Q104 VL SW
VR102 VH-H
VR107 VL-L
TUNING VOL. VR101
DISCRIMI-NATOR VOL.
DRIVE
SUB SWITCH
BS SWITCH
VOL. SWITCH
VOL. SWITCH
VR104 VH-L
VR103 VH-L
Q704 VIDEO AMP
DL610
Q603 VIDEO AMP
CLAMP
BLANK
VIDEO AMP
MATRIX
MATRIX
CHROM-A AMP
IC602 AN5612
Q801 RED OUTPUT
VR804 BIAS
VR801 DRIVE
Q802 GREEN OUTPUT
Q803 BLUE OUTPUT
VR803 BIAS
VR802 DRIVE
PCB002
SW301
11.4V
VR106 U-H
VR105 U-H
Q103 Q105 UL SW
Q102 UH SW
32V
IC402 UPC574J REGURATOR
SOUND VOL. VR301
R113
11.4V
PCB003
Q405 SOUND MUTE
VR404 SUB CONT
VR604-2 CONT
SW701-1 AUTO COLOR SW
VR607 SUB COLOR
VR604-3 COLOR
VR601 AUTO COLOR
VR604-4 V.HOLD
SYNC SEPC
VERT. OSC
VERT. DRIVE
HORIZ. OSC
X'RAY
IC401 LA7800
Q403 VERT. DRIVE
Q402 VERT. OUTPUT
Q401 VERT. OUTPUT
VR405 SUB H.HOLD
VR604 -5 H.HOLD
VR402 V.SIZE
DY801
C.R.T.
FB401
SW501
DC PLUG
J502
F501
SW502
T 2A 250V
AC220V
AC ADAPTOR
BATTERY 15V RECHARGEABLE BATTERY 10.8V
R505
Q501 DC OUTPUT
Q502 DC OUTPUT DRIVER
IC501 M5231L
REGURATOR
10.6V
VR501 DC ADJSUTMENT
32V
R451
D402
Q406 HORIZ. DRIVE
T401
Q402 HORIZ. OUTPUT
L404
10.6V
D406
R433
D408
R449
D412
11.4V
L405
SW401
PCB001

CTV-5X I-3337



CTV-5X

4-2301

REF. NO.	PART NO.	DESCRIPTION		Q'TY
101	713JPD0003	Cover, C.R.T.		1
102	701JPJ0268	Panel, Front		1
	7210000115	Plate, Dial Scale		1
	7230000077	Plate, Color		1
	800JNA0002	Reinforcement Boad, Cabinet		1
	800JQ00086	Sheet	50x2x0.5t	2
103	733JPA0021	Knob, Volume		1
104	781JEA0005	Shaft, Tuning		1
105	741JUA0014	Spring, Dial		1
106	871JPA0007	TV Dial Drum		1
107	873JPA0003	Pointer		1
108	8927015000	Pulley		2
109	783JSA0002	Pulley, Vis (2)		2
110	735JPA0167	Button, Power		1
111	761JPA0022	Frame, Dial		1
112	733JPA0020	Knob, Band Selector		1
113	762JSA0044	Holding Metal, Connector		1
114	702JPB0045	Cabinet, Top		1
	773JEE0002	Plate, Battery		2
	773JEE0003	Plate, Positive		1
	773JKE0001	Spring, Negative		3
	773JKE0002	Spring, Positive		2
	800JF00073	Dust Cover Cushion		2
	800JM00015	Cushion	160x30x5t	1
	800JM00019	Cushion	110x18x5t	1
	800JQ00088	Sheet	90x5x0.5t	1
	800JQ00089	Sheet	130x5x0.5t	1
115	703JPA0007	Lid, Battery		1
	752JSA0119	Plate, Shield		1
	800JM00015	Cushion	160x30x5t	2
116	731JPA0006	Knob, Tuning		1
117	769JPA0004	Holder, Handle		2
118	769JSA0005	Angle, Telescopic Antenna		1
119	705JPA0004	Handle		1
120	899PEC0340	Cord Clamp	No. PEC-034-0 DIA 3	2
121	771JPA0039	Plate, Jack DC		1
	7240000193	Sheet, DC Jack		1
122	890PJ004V0	RCA Type 4Pin Jack		1
123	736JPA0004	Button, Remote Set		4
124	771JPA0033	Plate, Jack Antenna		1
	7230000822	Sheet, PAL/SECAM		1
125	8931364000	Cord Bush	SR-14-1	1
126	702JPA0154	Cabinet, Bottom		1
	7222020190	Plate, Rating		1
	800JQ00087	Sheet	105x10x5t	1
127	704JPA0007	Bottom, Cabinet Leg Holder (L)		1
128	704JPA0002	Bottom, Cabinet Leg Holder (R)		1
129	704JKE0001	Bottom, Cabinet Leg		1
	704JRA0002	Tube Non Slip		2
130	83USN00237	Speed Nut	No. USN-00237	3

REF. NO.	PART NO.	DESCRIPTION		Q'TY
131	899P450000	Cord Clamp	No. P-45 DIA 4	4
132	741JUA0004	Spring, Earth		1
133	733JPA0022	Knob, Slide		1
134	763JAE0001	Heat Sink		1
135	761JSA0242	Angle, Tuner Pack		1
136	761JSA0243	Angle, Front Cabinet		1
137	83USN40040	Speed Nut	No. USN-4004	1
138	761JSA0228	Angle, Secam P.C.B.		1
201	8102130A22	Screw, Pan	M3x12 Black	1
202	8102220401	Screw, Bind	M2x4	2
203	8102230401	Screw, Bind	M3x4	1
204	8102230601	Screw, Bind	M3x6	5
205	8102230801	Screw, Bind	M3x8	1
206	8102330502	Screw, Flat	M3x5 Black	2
207	8102330802	Screw, Flat	M3x8 Black	2
208	8110630A02	Screw, Tap Tite (P)	M3x10 Black	2
209	8110630A04	Screw, Tap Tite (P)	M3x10	3
210	8110630802	Screw, Tap Tite (P)	M3x8 Black	2
211	8110630804	Screw, Tap Tite (P)	M3x8	4
212	8117E30A01	Screw, Tapping B	M3x10 (W/H 10ϕ)	3
213	8117E40B01	Screw, Tapping B	M4x20 (W/H 10ϕ)	4
214	8117540A02	Screw, Tapping B Truss	M4x10 Black	3
215	8117540A22	Screw, Tapping B Truss	M4x12 Black	3
216	82J3060146	Washer Tooth	M3	1
217	901B060000	Earth Lug	4.2ϕ (B6)	1
218	901D040000	Earth Lug	4.2ϕ (D4)	2
-	7240000202	Sheet, Fuse		1
-	791JHA0057	Sheet, Lightron		1
-	792JHA0082	Package, Top		1
-	792JHA0083	Package, Bottom		1
-	793JCD0915	Gift Box		1
-	795JCD0006	Pad, Accessories		1
-	8995167000	Band, Cord Clamp		7
-	800JF00076	Cushion	20x20x21t	1

AMENDMENT OF PARTS LIST

Model CTV-513

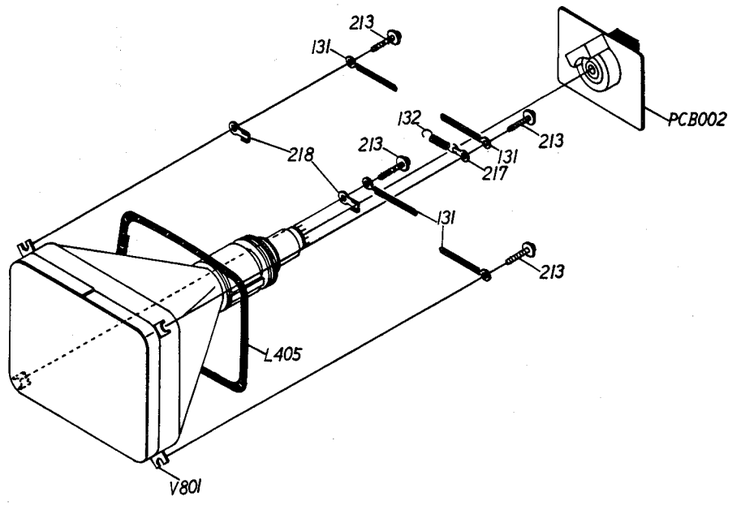
SERVICE MANUAL

REF. NO.	DESCRIPTION	DESCRIPTION(new)	CODE NO.
PCB ASS'Y		TM0050A-H	13TM0050A3H
C631	1uF 50V	0 1uF 50V	E021T50R1M
C711	471uF 6.3V	470uF 6.3V	E021F0471M

01.31.85'

J17023

2793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132
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218
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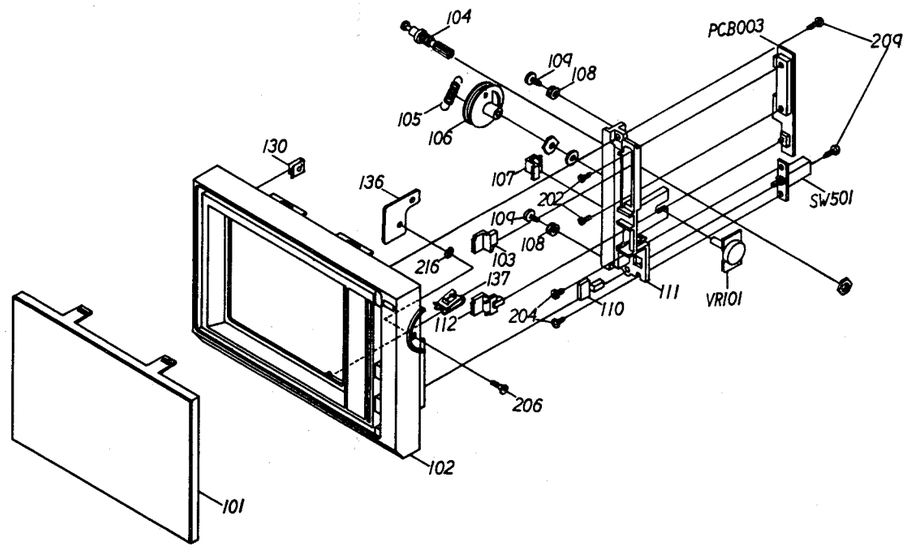
V801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SW501
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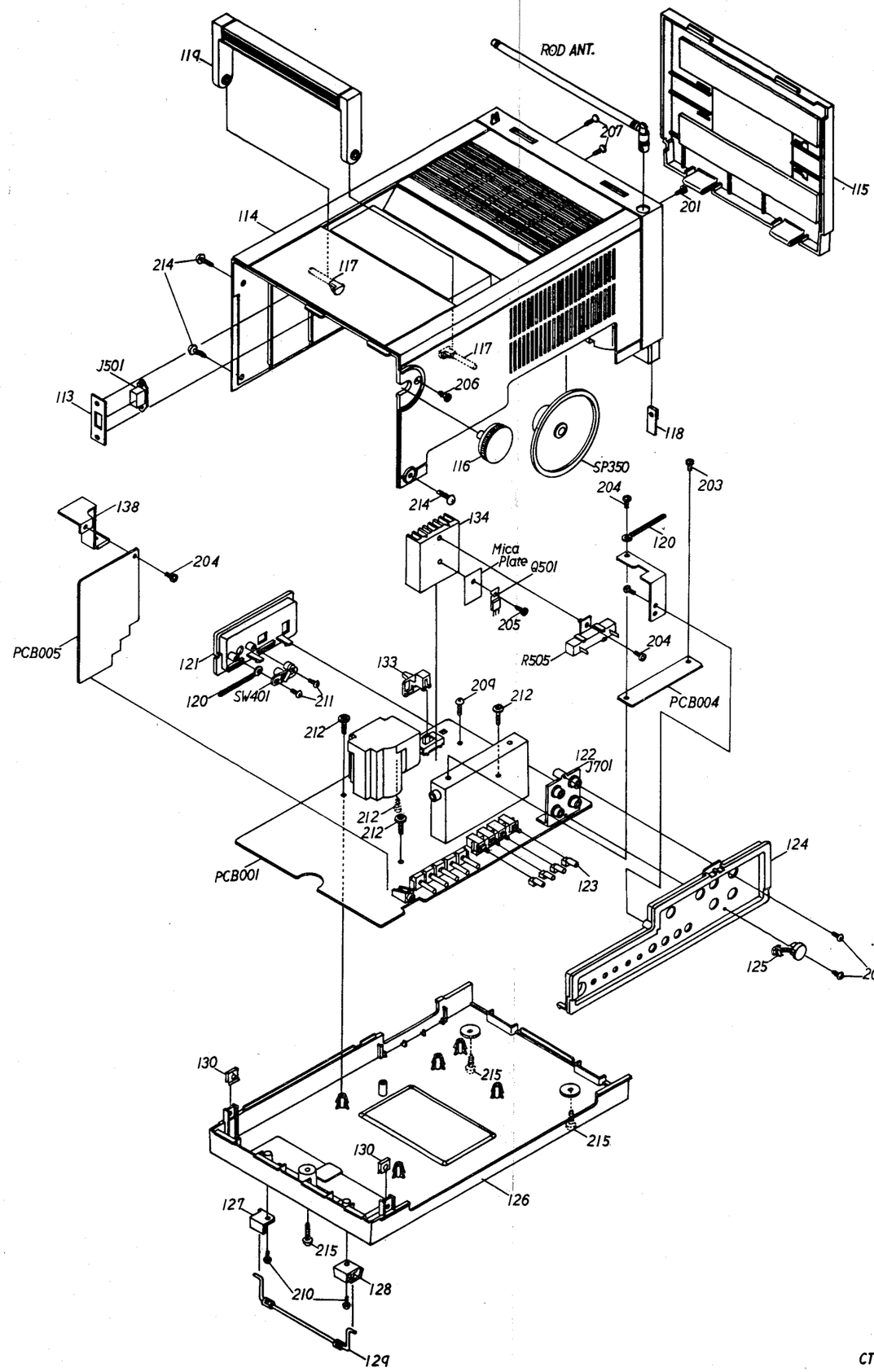
VR101
206
102
101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ROD ANT.
207
115
201
114
214
117
117
J501
206
113
118
116
SP350
214
203
204
138
134
120
Mica
Plate
Q501
204
205
PCB005
121
133
R505
204
209
212
PCB004
120
SW401
211
212
122
J701
212
212
PCB001
123
124
125
208
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215
130
215
126
127
215
210
128
129

CTV-5X
I-3344

-ELECTRICAL-

PARTS LIST FOR MODEL TYPE CTV-513

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REF.NO	PARTS.NO	DESCRIPTION					Q'TY
		-RESISTORS-					
R001	R615042R2J	R,FUSE ERQ-14AJ2R2	2.2	OHM	1/4W		1
R002	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R104	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R105	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R106	R031T6332J	RC RD16ST26-332J	3.3K	OHM	1/6W		1
R107	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R108	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R109	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R110	R031T6104J	RC RD16ST26-104J	100K	OHM	1/6W		1
R111	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R112	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R113	R031T6273J	RC RD16ST26-273J	27K	OHM	1/6W		1
R350	R031T6221J	RC RD16ST26-221J	220	OHM	1/6W		1
R351	R615042200J	R,FUSE ERQ-14AJ220	22	OHM	1/4W		1
R352	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R354	R031T4680J	RC RD25ST26-680J	68	OHM	1/4W		1
R355	R031T6152J	RC RD16ST26-152J	1.5K	OHM	1/6W		1
R401	R012T2010J	RC ERD-S1TJ010T	1	OHM	1/2W		1
R402	R031T4182J	RC RD25ST26-182J	1.8K	OHM	1/4W		1
R403	R012T22R7J	RC ERD-S1TJ2R7T	2.7	OHM	1/2W		1
R404	R012T2331J	RC ERD-S1TJ331T	330	OHM	1/2W		1
R405	R031T6822J	RC RD16ST26-822J	8.2K	OHM	1/6W		1
R406	R031T6392J	RC RD16ST26-392J	3.9K	OHM	1/6W		1
R407	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R408	R635040100J	R,FUSE RF25SJ 010	1	OHM	1/4W		1
R409	R635040100J	R,FUSE RF25SJ 010	1	OHM	1/4W		1
R410	R012T2271J	RC ERD-S1TJ271T	270	OHM	1/2W		1
R411	R012T2271J	RC ERD-S1TJ271T	270	OHM	1/2W		1
R412	R031T4101J	RC RD25ST26-101J	100	OHM	1/4W		1
R413	R031T6560J	RC RD16ST26-560J	56	OHM	1/6W		1
R414	R012T2470J	RC ERD-S1TJ470T	47	OHM	1/2W		1
R415	R031T6124J	RC RD16ST26-124J	120K	OHM	1/6W		1
R416	R031T6101J	RC RD16ST26-101J	100	OHM	1/6W		1
R417	R031T6124J	RC RD16ST26-124J	120K	OHM	1/6W		1
R418	R615041000J	R,FUSE ERQ-14AJ100	10	OHM	1/4W		1
R419	R031T6152J	RC RD16ST26-152J	1.5K	OHM	1/6W		1
R420	R031T6223J	RC RD16ST26-223J	22K	OHM	1/6W		1
R421	R031T6393J	RC RD16ST26-393J	39K	OHM	1/6W		1
R422	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R423	R031T6274J	RC RD16ST26-274J	270K	OHM	1/6W		1
R424	R031T6222J	RC RD16ST26-222J	2.2K	OHM	1/6W		1
R425	R031T4123J	RC RD25ST26-123J	12K	OHM	1/4W		1
R426	R03106154J	RC RD16S-154J	150K	OHM	1/6W		1
R427	R031T6471J	RC RD16ST26-471J	470	OHM	1/6W		1
R428	R031T6273J	RC RD16ST26-273J	27K	OHM	1/6W		1
R429	R031T6272J	RC RD16ST26-272J	2.7K	OHM	1/6W		1
R430	R031T6104J	RC RD16ST26-104J	100K	OHM	1/6W		1
R432	R031T6273J	RC RD16ST26-273J	27K	OHM	1/6W		1
R433	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R434	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R435	R031T6563J	RC RD16ST26-563J	56K	OHM	1/6W		1
R436	R031T6182J	RC RD16ST26-182J	1.8K	OHM	1/6W		1
R437	R031T6822J	RC RD16ST26-822J	8.2K	OHM	1/6W		1
R438	R031T6822J	RC RD16ST26-822J	8.2K	OHM	1/6W		1
R439	R031T6272J	RC RD16ST26-272J	2.7K	OHM	1/6W		1
R440	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R441	R031T6103J	RC RD16ST26-103J	10K	OHM	1/6W		1
R442	R031T4332J	RC RD25ST26-332J	3.3K	OHM	1/4W		1
R443	R031T6332J	RC RD16ST26-332J	3.3K	OHM	1/6W		1
R444	R615042200J	R,FUSE ERQ-14AJ220	22	OHM	1/4W		1
R445	R031T6473J	RC RD16ST26-473J	47K	OHM	1/6W		1
R446	R012T2563J	RC ERD-S1TJ563T	56K	OHM	1/2W		1
R447	R031T4102J	RC RD25ST26-102J	1K	OHM	1/4W		1
R449	R635040100J	R,FUSE RF25SJ 010	1	OHM	1/4W		1
R450	R031T6333J	RC RD16ST26-333J	33K	OHM	1/6W		1
R451	R012T2183J	RC ERD-S1TJ183T	18K	OHM	1/2W		1
R452	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R455	R031T6822J	RC RD16ST26-822J	8.2K	OHM	1/6W		1
R456	R031T6561J	RC RD16ST26-561J	560	OHM	1/6W		1
R457	R031T6273J	RC RD16ST26-273J	27K	OHM	1/6W		1
R458	R031T4153J	RC RD25ST26-153J	15K	OHM	1/4W		1
R501	R012T2561J	RC ERD-S1TJ561T	560	OHM	1/2W		1
R503	R012T2271J	RC ERD-S1TJ271T	270	OHM	1/2W		1
R504	R031T4222J	RC RD25ST26-222J	2.2K	OHM	1/4W		1
R505	R512BF120J	R,CEMENT ERF-10HMJ	120	12	OHM	10W	1
R506	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R605	R031T6183J	RC RD16ST26-183J	18K	OHM	1/6W		1
R607	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R608	R031T6391J	RC RD16ST26-391J	390	OHM	1/6W		1
R609	R031T4224J	RC RD25ST26-224J	220K	OHM	1/4W		1
R610	R031T6681J	RC RD16ST26-681J	680	OHM	1/6W		1
R613	R031T6224J	RC RD16ST26-224J	220K	OHM	1/6W		1
R614	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R624	R03106821J	RC RD16S-821J	820	OHM	1/6W		1
R625	R031T6182J	RC RD16ST26-182J	1.8K	OHM	1/6W		1
R626	R031T6393J	RC RD16ST26-393J	39K	OHM	1/6W		1
R627	R031T6471J	RC RD16ST26-471J	470	OHM	1/6W		1
R628	R031T6471J	RC RD16ST26-471J	470	OHM	1/6W		1
R630	R031T4272J	RC RD25ST26-272J	2.7K	OHM	1/4W		1
R631	R031T6471J	RC RD16ST26-471J	470	OHM	1/6W		1
R632	R031T6391J	RC RD16ST26-391J	390	OHM	1/6W		1
R633	R031T6152J	RC RD16ST26-152J	1.5K	OHM	1/6W		1
R634	R031T4103J	RC RD25ST26-103J	10K	OHM	1/4W		1
R635	R031T4683J	RC RD25ST26-683J	68K	OHM	1/4W		1
R637	R031T4102J	RC RD25ST26-102J	1K	OHM	1/4W		1
R638	R031T4271J	RC RD25ST26-271J	270	OHM	1/4W		1
R639	R031T4271J	RC RD25ST26-271J	270	OHM	1/4W		1
R640	R031T4271J	RC RD25ST26-271J	270	OHM	1/4W		1
R641	R031T6472J	RC RD16ST26-472J	4.7K	OHM	1/6W		1
R642	R031T6392J	RC RD16ST26-392J	3.9K	OHM	1/6W		1
R643	R031T6471J	RC RD16ST26-471J	470	OHM	1/6W		1
R645	R031T4681J	RC RD25ST26-681J	680	OHM	1/4W		1
R650	R031T6153J	RC RD16ST26-153J	15K	OHM	1/6W		1
R651	R031T6102J	RC RD16ST26-102J	1K	OHM	1/6W		1
R653	R615041000J	R,FUSE ERQ-14AJ100	10	OHM	1/4W		1

PARTS LIST FOR MODEL TYPE CTV-513

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REF.NO	PARTS.NO	DESCRIPTION		Q'TY
		-RESISTORS-		
R656	R61504100J	R,FUSE ERQ-14AJ100	10 OHM 1/4W	1
R658	RO31T6682J	RC RD16ST26-682J	6.8K OHM 1/6W	1
R659	RO31T6682J	RC RD16ST26-682J	6.8K OHM 1/6W	1
R688	RO31T6472J	RC RD16ST26-472J	4.7K OHM 1/6W	1
R701	RO31T6100J	RC RD16ST26-100J	10 OHM 1/6W	1
R702	RO31T6152J	RC RD16ST26-152J	1.5K OHM 1/6W	1
R703	RO31T6153J	RC RD16ST26-153J	15K OHM 1/6W	1
R704	RO31T6273J	RC RD16ST26-273J	27K OHM 1/6W	1
R705	RO31T6223J	RC RD16ST26-223J	22K OHM 1/6W	1
R706	RO31T6391J	RC RD16ST26-391J	390 OHM 1/6W	1
R707	RO31T6822J	RC RD16ST26-822J	8.2K OHM 1/6W	1
R708	RO31T6333J	RC RD16ST26-333J	33K OHM 1/6W	1
R709	RO31T6331J	RC RD16ST26-331J	330 OHM 1/6W	1
R710	RO31T6681J	RC RD16ST26-681J	680 OHM 1/6W	1
R711	RO31068820J	RC RD16S-820J	82 OHM 1/6W	1
R712	RO31T6221J	RC RD16ST26-221J	220 OHM 1/6W	1
R713	RO31T6472J	RC RD16ST26-472J	4.7K OHM 1/6W	1
R715	RO31T6822J	RC RD16ST26-822J	8.2K OHM 1/6W	1
R716	RO31T6153J	RC RD16ST26-153J	15K OHM 1/6W	1
R717	RO31T6470J	RC RD16ST26-470J	47 OHM 1/6W	1
R718	RO31T6153J	RC RD16ST26-153J	15K OHM 1/6W	1
R719	RO31T6122J	RC RD16ST26-122J	1.2K OHM 1/6W	1
R720	RO31T6122J	RC RD16ST26-122J	1.2K OHM 1/6W	1
R721	RO31T6104J	RC RD16ST26-104J	100K OHM 1/6W	1
R722	RO31T6680J	RC RD16ST26-680J	68 OHM 1/6W	1
R723	RO31T6122J	RC RD16ST26-122J	1.2K OHM 1/6W	1
R801	RO31T6181J	RC RD16ST26-181J	180 OHM 1/6W	1
R802	RO31T6272J	RC RD16ST26-272J	2.7K OHM 1/6W	1
R803	RO31T6101J	RC RD16ST26-101J	100 OHM 1/6W	1
R804	RO31T6272J	RC RD16ST26-272J	2.7K OHM 1/6W	1
R805	RO31T6271J	RC RD16ST26-271J	270 OHM 1/6W	1
R806	RO31T6332J	RC RD16ST26-332J	3.3K OHM 1/6W	1
R807	RO31T6152J	RC RD16ST26-152J	1.5K OHM 1/6W	1
R808	RO31T6272J	RC RD16ST26-272J	2.7K OHM 1/6W	1
R809	RO31T6181J	RC RD16ST26-181J	180 OHM 1/6W	1
R810	RO12T2272J	RC ERD-S1TJ272T	2.7K OHM 1/2W	1
R811	RO12T2272J	RC ERD-S1TJ272T	2.7K OHM 1/2W	1
R812	RO12T2272J	RC ERD-S1TJ272T	2.7K OHM 1/2W	1
R813	RO12T2153J	RC ERD-S1TJ153T	15K OHM 1/2W	1
R814	RO12T2153J	RC ERD-S1TJ153T	15K OHM 1/2W	1
R815	RO12T2153J	RC ERD-S1TJ153T	15K OHM 1/2W	1
R816	RO12T2474J	RC ERD-S1TJ474T	470K OHM 1/2W	1
R681	RO31T4472J	RC RD25ST26-472J	4.7K OHM 1/4W	1
R682	RO31T6221J	RC RD16ST26-221J	220 OHM 1/6W	1
R683	RO31T6561J	RC RD16ST26-561J	560 OHM 1/6W	1
R684	RO31T4102J	RC RD25ST26-102J	1K OHM 1/4W	1
R685	RO31T6102J	RC RD16ST26-102J	1K OHM 1/6W	1
R687	RO31T6331J	RC RD16ST26-331J	330 OHM 1/6W	1
R689	RO31T6331J	RC RD16ST26-331J	330 OHM 1/6W	1
R691	RO31T6562J	RC RD16ST26-562J	5.6K OHM 1/6W	1
R693	RO31T65R6J	RC RD16ST26-5R6J	5.6 OHM 1/6W	1
R694	RO31T6102J	RC RD16ST26-102J	1K OHM 1/6W	1
		-CAPACITORS-		
C001	EO27T2221M	CE 16TWSS221MTA	220 UF 16V	1
C002	EO21T52R2M	CE 50TWMS2R2MTA	2.2 UF 50V	1
C003	EO21T52R2M	CE 50TWMS2R2MTA	2.2 UF 50V	1
C004	EO21T5100M	CE 50TWMS100MTA	10 UF 50V	1
C005	EO21T5R47M	CE 50TWMSR47MTA	0.47 UF 50V	1
C006	EO27F2331M	CE 16TWSS331MKC	330 UF 16V	1
C007	EO21T5100M	CE 50TWMS100MTA	10 UF 50V	1
C350	EO27T2101M	CE 16TWSS101MTA	100 UF 16V	1
C351	EO13T2470M	CE ECEA1CK470B	47 UF 16 V	1
C352	P121T0103J	CP 50F2S103JTV	0.01 UF 50V	1
C353	EO13T2101M	CE ECEA1CK101B	100 UF 16 V	1
C354	EO21F2471M	CE 16TWMS471MCK	470 UF 16V	1
C355	EO21T5010M	CE 50TWMS010MTA	1 UF 50V	1
C356	EO13T2330M	CE ECEA1CK330B	33 UF 16 V	1
C357	P121T0153K	CP 50F2S153KTV	0.015 UF 50V	1
C358	CO2TSL4L2K	CC RTHE80SJSL331K	330 PF SL	1
C359	P121T0683K	CP 50F2S683KTV	0.068 UF 50V	1
C401	EO19F3100M	CE ECEA25W10ZA	10 UF 25V	1
C403	P341F4473J	CPP DTW-473J-400V	0.047 UF 400V	1
C404	EO27F2102M	CE 16TWSS102MKC	1000 UF 16V	1
C405	EO27F2102M	CE 16TWSS102MKC	1000 UF 16V	1
C406	CO2TF0413Z	CC RTHE40SJYF102Z	0.001 UF F	1
C407	EO21T2330M	CE 16TWMS330MTA	33 UF 16V	1
C408	CO2TB0513K	CC RTHM60SJYB102K	0.001 UF 500V B	1
C409	E252T2010M	CTANTAL DA1C010M	1 UF 16V	1
C410	CO2TF0413Z	CC RTHE40SJYF102Z	0.001 UF F	1
C411	EO27T2221M	CE 16TWSS221MTA	220 UF 16V	1
C412	P124T0823K	CP 50F2D823	0.082 UF 50V	1
C413	P121F0822K	CP 50F2S822KFC05	0.0082UF 50V	1
C414	P121F0273K	CP 50F2S273KFC05	0.027 UF 50V	1
C415	CO2TF0413Z	CC RTHE40SJYF102Z	0.001 UF F	1
C416	CO2TF0413Z	CC RTHE40SJYF102Z	0.001 UF F	1
C417	E252T2010M	CTANTAL DA1C010M	1 UF 16V	1
C418	P121T0683K	CP 50F2S683KTV	0.068 UF 50V	1
C419	P121F0223K	CP 50F2S223K	0.022 UF 50V	1
C420	P121001O2K	CP 50F2S102K	0.001 UF 50V	1
C421	EO21T5010M	CE 50TWMS010MTA	1 UF 50V	1
C422	P121T0472K	CP 50F2S472KTV	0.0047UF 50V	1
C423	CO2TSL4U2K	CC RTHE11SJSL681K	680 PF 50V SL	1
C424	P121F0152K	CP 50F2S152K	0.0015UF 50V	1
C425	CO2TSL4L2K	CC RTHE80SJSL331K	330 PF SL	1
C426	CO2FSL4K2K	CC HE70TJSL271K	270 PF SL	1
C427	EO21T2470M	CE 16TWMS470MTA	47 UF 16V	1
C428	EO25FB4R7M	CE 160TWS4R7M	4.7 UF 160V	1
C429	P54100562J	CPL DSR-562J-50V	0.0056UF 50V	1
C430	P121T0103J	CP 50F2S103JTV	0.01 UF 50V	1
C431	EO21T5010M	CE 50TWMS010MTA	1 UF 50V	1
C432	P121T0473K	CP 50F2S473KTV	0.047 UF 50V	1
C433	P121T0333K	CP 50F2S333KTV	0.033 UF 50V	1
C434	CO2TSL4U2K	CC RTHE11SJSL681K	680 PF 50V SL	1
C435	EO21F5010M	CE 50TWMS010MCK	1 UF 50V	1

PARTS LIST FOR MODEL TYPE CTV-513

REF.NO	PARTS.NO	DESCRIPTION					Q'TY
		-CAPACITORS-					
C436	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C437	E021T2101M	CE 16TWMS101MTA	100	UF	16V		1
C438	E025FB100M	CE 160TWS100M	10	UF	160V		1
C439	E02E0B2R2M	CE 160NW2R2M	2.2	UF	160V		1
C440	P34102104J	CPP DTW-104J-200V	0.1	UF	200V		1
C442	C02FF04@4Z	CC RTHE12SJYF473Z	0.047	UF			1
C443	E027F2102M	CE 16TWSS102MKC	1000	UF	16V		1
C444	C02TF04H4Z	CC RTHE90SJYF223Z	0.022	UF		ZF	1
C445	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C446	E021T2330M	CE 16TWMS330MTA	33	UF	16V		1
C447	E021T5R47M	CE 50TWMSR47MTA	0.47	UF	50V		1
C448	E027Q2221M	CE 16TWSS221M	220	UF	16V		1
C501	E027F3471M	CE 25TWSS471MKC	470	UF	25V		1
C503	E021T2101M	CE 16TWMS101MTA	100	UF	16V		1
C504	E021T5010M	CE 50TWMS010MTA	1	UF	50V		1
C506	C02TSL4H2J	CC RTHE70SJSL221J	220	PF		SL	1
C601	CF4TSL4B2J	CC UP125SL121JA	120	PF	50V		1
C602	E021F2471M	CE 16TWMS471MCK	470	UF	16V		1
C603	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C604	C02TRH431J	CC RTHE50SJRH300J	30	PF		N220	1
C605	C02TRH411F	CC RTHE40SJRH101F	10	PF		N220	1
C606	C02TRH411F	CC RTHE40SJRH101F	10	PF		N220	1
C607	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C608	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C609	E021T53R3M	CE 50TWMS3R3MTA	3.3	UF	50V		1
C610	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C611	E02ET5010M	CE 50NW010M	1	UF	50V		1
C614	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C615	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C616	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C617	C02TSL4U2J	CC RTHE11SJSL681J	680	PF		SL	1
C618	C02FSL4Q1J	CC HE40SJSL470J	47	PF	SL		1
C621	E027F2102M	CE 16TWSS102MKC	1000	UF	16V		1
C622	C02TF04H4Z	CC RTHE90SJYF223Z	0.022	UF		ZF	1
C623	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C625	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C626	E02ET34R7M	CE 25NW4R7M	4.7	UF	25V		1
C627	E021T50R1M	CE 50TWMS0R1MTA	0.1	UF	50V		1
C628	E021T50R1M	CE 50TWMS0R1MTA	0.1	UF	50V		1
C629	E02ET34R7M	CE 25NW4R7M	4.7	UF	25V		1
C630	C02TSL4N1J	CC RTHE40SJSL390J	39	PF		SL	1
C631	E021T5010M	CE 50TWMS010MTA	1	UF	50V		1
C632	C02TSL4N1J	CC RTHE40SJSL390J	39	PF		SL	1
C633	C020SL4N1J	CC HE40SJSL390J	39	PF		SL	1
C634	C02FSL4W1K	CC 50TJSL820K	82	PF		SL	1
C635	E021T5010M	CE 50TWMS010MTA	1	UF	50V		1
C636	E021T5010M	CE 50TWMS010MTA	1	UF	50V		1
C637	E021T53R3M	CE 50TWMS3R3MTA	3.3	UF	50V		1
C638	P121T0153K	CP 50F2S153KTV	0.015	UF	50V		1
C639	P121T0153K	CP 50F2S153KTV	0.015	UF	50V		1
C640	C020SL4N1J	CC HE40SJSL390J	39	PF		SL	1
C701	E021T5010M	CE 50TWMS010MTA	1	UF	50V		1
C702	E021T2101M	CE 16TWMS101MTA	100	UF	16V		1
C703	C020SL4R1K	CC HE40SJSL510K	51	PF		SL	1
C704	C02TF0414Z	CC RTHE70SJYF103Z	0.01	UF		F	1
C705	E021F2471M	CE 16TWMS471MCK	470	UF	16V		1
C706	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C707	E021T5100M	CE 50TWMS100MTA	10	UF	50V		1
C708	E027T2221M	CE 16TWSS221MTA	220	UF	16V		1
C709	E021T2330M	CE 16TWMS330MTA	33	UF	16V		1
C710	E02ET3100M	CE 25NW100M	10	UF	25V		1
C711	E021F0471M	CE 6.3TWMS471MKC	471	UF	6.3V		1
C801	C02TSL4H2K	CC RTHE70SJSL221K	220	PF		SL	1
C802	C02FSL4N2K	CC RTHE80SJSL391J	390	PF			1
C803	C02TSL4H2K	CC RTHE70SJSL221K	220	PF		SL	1
C804	C03FB0713K	CC DD3120-362B102K2KV02	1000PF		2KV	B	1
C805	C03FB0713K	CC DD3120-362B102K2KV02	1000PF		2KV	B	1
C641	P02100161J	CST 50SU161J	160	PF	50V		1
C642	E021F2100M	CE 16TWMS100MCK	10	UF	16V		1
C667	CF4TX0314M	CC TP125X103MA	0.01	UF	25V		1
C674	CH4TY0214M	CC EP050 Y103M	10000	PF	16V		1
C675	C02FRH431K	CC HE50TJRH300K	30	PF		N220	1
C680	CH4TY02H4M	CC EP050 Y223M	22000	PF	16 V		1
C681	CH4TY0214M	CC EP050 Y103M	10000	PF	16V		1
C682	CF4TX0314M	CC TP125X103MA	0.01	UF	25V		1
C683	C02FRH412K	CC HE70TJRH101K	100	PF			1
C684	C02FRH4H1K	CC HE40TJRH220K	22	PF	N220		1
C685	CH4TB0413J	CC UP050 B102J	1000	PF	50 V		1
C686	C02FRH412K	CC HE70TJRH101K	100	PF			1
C687	E021F2101M	CE 16TWMS101MKC	100	UF	16V		1
C688	E251F3010M	CTANTAL DNIE010MIS	1	UF	25V		1
C689	E251F3010M	CTANTAL DNIE010MIS	1	UF	25V		1
C691	C02FRH431K	CC HE50TJRH300K	30	PF		N220	1
C692	CH4TB0413J	CC UP050 B102J	1000	PF	50 V		1
C693	C02FRH4H1K	CC HE40TJRH220K	22	PF	N220		1
C694	P02100271J	CST 50SU271J	270	PF	50V		1
C695	C02FRH412K	CC HE70TJRH101K	100	PF			1
C696	C02FRH431K	CC HE50TJRH300K	30	PF		N220	1
C697	CH4TY0214M	CC EP050 Y103M	10000	PF	16V		1
C698	P02100271J	CST 50SU271J	270	PF	50V		1
C699	E021F2100M	CE 16TWMS100MCK	10	UF	16V		1
		-SEMICONDUCTORS-					
IC101	I01S057000	INTEGRATED CIRCUIT	AN5700				1
IC350	I05SP73130	INTEGRATED CIRCUIT	TA7313AP				1
IC401	I03DD78000	INTEGRATED,CIRCUIT	LA7800				1
IC402	I02990574J	INTEGRATED CIRCUIT	UPC574J				1
IC501	I06T95231L	INTEGRATED,CIRCUIT	M5231L				1
IC601	I01D5620X0	INTEGRATED,CIRCUIT	AN5620X				1
IC602	I01DE56120	INTEGRATED CIRCUIT	AN5612				1
IC603	I01D056300	INTEGRATED,CILRCUIT	AN5630				1
Q101	TA2T007330	TRANSISTOR SILICON	2SA733-T				1
Q102	TA2T007330	TRANSISTOR SILICON	2SA733-T				1
Q103	TC2T009450	TRANSISTOR SILICON	2SC945-T				1
Q104	TC2T009450	TRANSISTOR SILICON	2SC945-T				1
Q105	TC2T009450	TRANSISTOR SILICON	2SC945-T				1

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PARTS LIST FOR MODEL TYPE CTV-513

REF.NO	PARTS.NO	DESCRIPTION		Q'TY	
		-SEMICONDUCTORS-			
Q401	TD300612KE	TRANSISTOR SILICON	2SD612KE	1	
Q402	TB300632KE	TRANSISTOR SILICON	2SB632KE	1	
Q403	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q404	TD1000772O	TRANSISTOR,SILICON	2SD772	1	
Q405	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q406	TC2T020010	TRANSISTOR SILICON	2SC2001-T	1	
Q407	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q408	TA2T007330	TRANSISTOR SILICON	2SA733-T	1	
Q501	TB1000870O	TRANSISTOR,SILICON	2SB870	1	
Q502	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q603	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q701	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q702	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q703	TC3T022740	TRANSISTOR,SILICON	2SC2274	1	
Q704	TC2T009450	TRANSISTOR SILICON	2SC945-T	1	
Q801	TC3002271E	TRANSISTOR,SILICON	2SC2271E	1	
Q802	TC3002271E	TRANSISTOR,SILICON	2SC2271E	1	
Q803	TC3002271E	TRANSISTOR,SILICON	2SC2271E	1	
D401	D28F00BB40	DIODE,RECTIFIER	BB4-FC	1	
D402	D28T010D20	DIODE RECTIFIER	10D-2 T	1	
D403	D6400023GB	DIODE VARISTA	HV23GBL	1	
D404	D6400023GB	DIODE VARISTA	HV23GBL	1	
D405	D13TGMA010	DIODE,SILICON	GMA-01-BT	1	
D406	D9200110B2	DIODE ZENER	RD11EB 2	1	
D407	D13TGMA010	DIODE,SILICON	GMA-01-BT	1	
D408	D23TDFD05G	DIODE,RECTIFIER	DFD05G	1	
D409	D13TGMA010	DIODE,SILICON	GMA-01-BT	1	
D410	D13TGMA010	DIODE,SILICON	GMA-01-BT	1	
D411	D28F00BB80	DIODE,RECTIFIER	BB8-F	1	
D412	D28F00BB40	DIODE,RECTIFIER	BB4-FC	1	
D501	D28T010D10	DIODE RECTIFIER	10D-1 T	1	
D502	D28T010D10	DIODE RECTIFIER	10D-1 T	1	
D701	D13TGMA010	DIODE,SILICON	GMA-01-BT	1	
		- COILS & TRANSFORMERS-			
L401	0221000005	COIL,LINEARITY	21000005 ELH5L90	1	
L402	021669472K	COIL ELO909SKI-472K	4.7 MH	1	
L403	021706301J	COIL 6C12-A-301J	300 UH	1	
L404	021764101K	COIL 6C8-C-101K	100 UH	1	
L405	028D5R5002	COIL,DEGAUS	8D5R5002	1	
L601	0216834R7K	COIL ELO606SKI-4R7K	4.7 UH	1	
L604	021606221K	COIL FS0810-221K	220 UH	1	
L605	021606221K	COIL FS0810-221K	220 UH	1	
L606	021663470K	COIL ELO606SKI-470K	47 UH	1	
L607	021683390K	COIL ELO606-390K	39 UH	1	
L608	021663680K	COIL ELO606SKI-680K	68 UH	1	
L701	021663150K	COIL ELO606SKI-150K	15 UH	1	
L801	021663101K	COIL ELO606SKI-101K	100 UH	1	
L611	03353A0028	COIL,MATCHING	16035SU	1	
L612	03352R0078	COIL,CHROMA	352R007 16035SU	1	
L613	0216734R7K	COIL ELO606RA-4R7K	4.7 UH	1	
L614	021673100K	COIL ELO606RA-100K	10 UH	1	
L615	03352R0064	COIL,CHROMA	16071	1	*
L616	03352R0064	COIL,CHROMA	16071	1	*
L618	03302R0018	COIL,CHROMA	302R001 16032SU	1	
L619	03352R0064	COIL,CHROMA	16071	1	*
T401	0450190041	TRANS,HORIZONTAL DRIVE	1418MS	1	
		-JACK & CONNECTORS-			
J350	0602101007	JACK,RCA 35	HSJ0800-01-020	1	
J502	0602601002	JACK,DC	HEC0470-01-620	1	
⚠ J801	0662110003	SOCKET,CAHODE,RAY TUBE	HPS0110-01-210	1	
		-SWITCHES-			
SW301	0510222001	SWITCH,SLIDE	SSS-322	1	
SW401	0500101001	SWITCH,PUSH	SW-9B	1	
SW501	0530105001	SWITCH, PUSH	ESB-8213V	1	
SW502	0510122007	SWITCH,SLIDE	ESD-2764	1	
SW602	0510422001	SWITCH,SLIDE	SS-009-7H	1	
SW701	0500104002	SWITCH,PUSH	ESB-621531	1	
		-SEMI-FIXED RESISTORS-			
VR102	V115254B03	VOLUME,SEMI FIXED	EVN-K0AA00B54	1	
VR103	V115254B03	VOLUME,SEMI FIXED	EVN-K0AA00B54	1	
VR104	V115215B03	VOLUME,SEMI FIXED	EVN-K0AA00B15	1	
VR105	V115254B03	VOLUME,SEMI FIXED	EVN-K0AA00B54	1	
VR106	V115253B03	VOLUME,SEMI FIXED	EVN-K0AA00B53	1	
VR107	V115253B03	VOLUME,SEMI FIXED	EVN-K0AA00B53	1	
VR402	V115232B01	VOLUME SEMI FIXED	EVN-K0AA00B32	1	
VR405	V115333B02	VOLUME,SEMI FIZED	EVN-52JA00B33	1	
VR501	V115313B02	VOLUME,SEMI FIXED	EVN-52JA00B13	1	
VR404	V115354B02	VOLUME,SEMI FIXED	EVN-52JA00B54	1	
VR601	V115354B02	VOLUME,SEMI FIXED	EVN-52JA00B54	1	
VR605	V1263H3B01	VOLUME SEMI FIXED	H0615C109-2.2KB	1	
VR607	V1263Q3B01	VOLUME SEMI FIXED	H0615C111-4.7KB	1	
VR610	V1263H4B01	VOLUME SEMI FIXED	H0615C115-22KB	1	
VR801	V175C52B01	VOLUME,SEMI FIXED	RVA0911H304-1-501M	1	
VR802	V175C53B01	VOLUME,SEMI FIXED	RVA0911H304-1-502M	1	
VR803	V175C52B03	VOLUME,SEMI FIXED	RVA0911H304-3-501M	1	
VR804	V175C53B03	VOLUME,SEMI FIXED	RVA0911H304-3-502M	1	
VR609	V115323B02	VOLUME,SEMI FIXED	EVN-52JA00B23	1	
VR612	V115353B02	VOLUME,SEMI FIXED	EVN-52JA00B53	1	
VR613	V115353B02	VOLUME,SEMI FIXED	EVN-52JA00B53	1	
VR101	V011015B03	VOLUME,ROTALY	EWH-BMA091B15	1	
VR301	V243124B01	SLIDE VOLUME	VJ3013-2PVN10CB20KOHM	1	
VR604	V019500003	VOLUME,ROTALY	EVUG5ABA0010	1	
		-P.C. BOARDS-			
PCB001	13TM0050A3	PCB	TM0050A	1	
PCB002	13TC0046A3	PCB	TC0046A	1	
PCB003	13TE0177A3	PCB	TE0177A	1	
PCB004	13TE0209A3	PCB	TE0209A	1	
PCB005	13TE0207A3	PCB	TE0207A	1	
		-MISCELLANEOUS-			
⚠ TU101	0145201002	TUNER,UHF-VHF	EC-IE-0104	1	
PF350	11624223S2	FILTER EMI	DSS310-55D223S	1	
⚠ FB401	0437050021	TRANSFOMER,FLYBACK	3705002	1	

PARTS LIST FOR MODEL TYPE CTV-513

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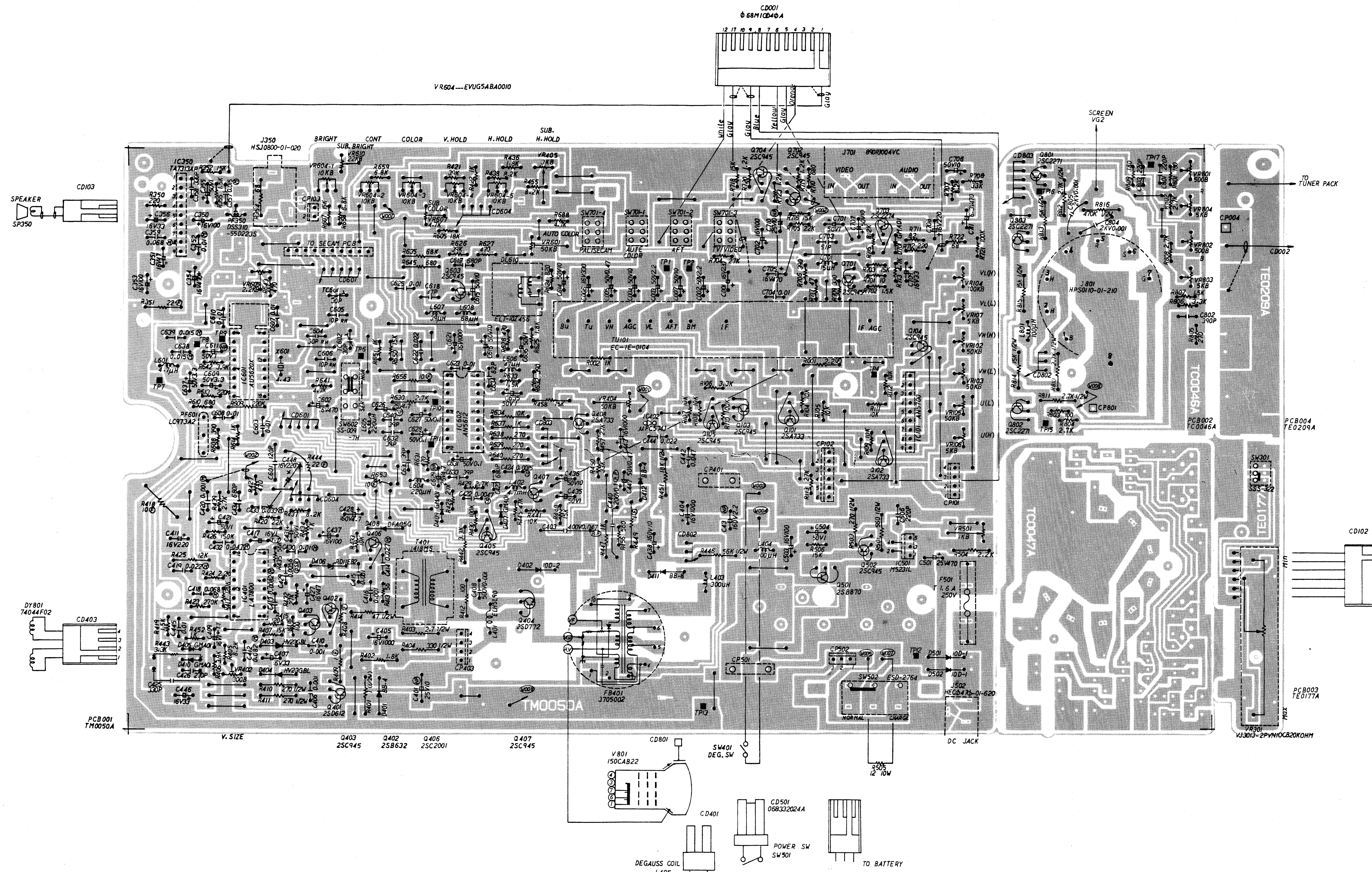
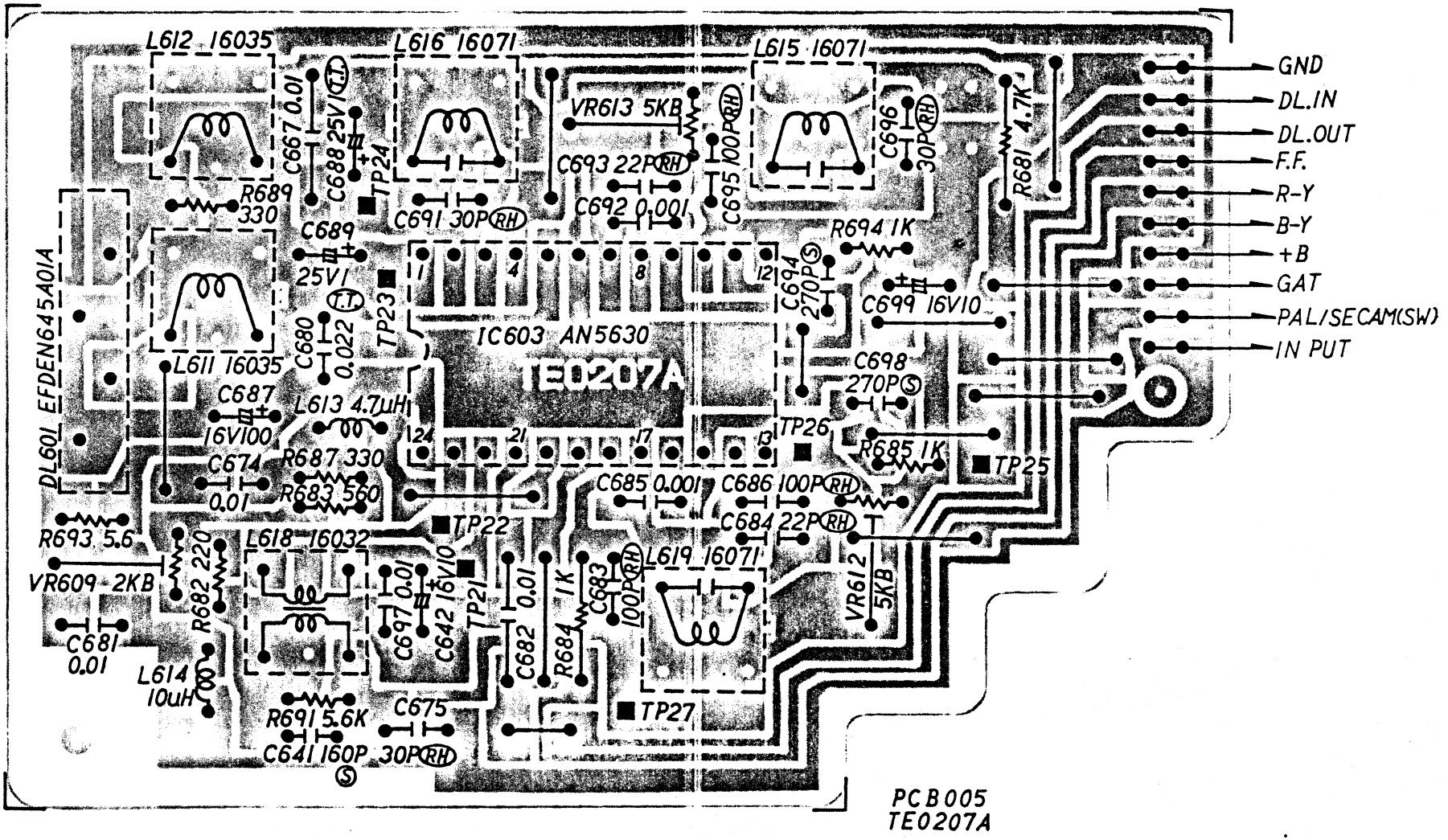
REF.NO	PARTS.NO	DESCRIPTION		Q'TY
		-MISCELLANEOUS-		
FH501	067H000001	HOLDER,FUSE	7800-6268	1
FH502	067H000001	HOLDER,FUSE	7800-6268	1
⚠ F501	0802T1R601	FUSE	FST 1.6 A (T) 250V	1
DL610	10312R5001	DELAY	ELT-10Z456	1
PF601	1144144601	FILTER,BAND PASS	LC-973A2	1
TC601	0100514001	C,CERAMIC TRIMMER	TZ03R300E	1
TC602	0100514001	C,CERAMIC TRIMMER	TZ03R300E	1
X601	10054R4301	CRYSTAL	NR-18 NDK4.433619MHZ	1
DL601	104114R431	DELAY LINE GLASS	EFD-EN645A01A	1
EAR001	074F130002	EARPHONE	4F130002	1
⚠ AD501	0415420011	AC ADAPTER	AD-8067	1
ANT001	1255110005	ANTENNA ROD	T-2288	1
BT501	063T100001	SOCKET,CHARGE	3T100001	1
CD001	068M1C040A	CORD EIS CONNECTOR	8M1C040A	1
CD002	0683H15002	CORD UX CONNECTOR	83H15002	1
CD003	0682H11003	CORD,COAXITAL	HXC0492-01-010	1
CD004	068301040A	CORD EIS CONNECTOR	8301040A	1
CD101	068M14071A	CORD EIS CONNECTOR	8M14071A	1
CD102	068M16042A	CORD EIS CONNECTOR	8M16042A	1
CD103	068312105A	CORD EIS CONNECTOR	8312105A	1
CD501	068332024A	CORD EIS CONNECTOR	8332024A	1
CD502	068313076A	CORD EIS CONNECTOR	8313076A	1
CD601	122N051101	CORD,JUNPER	2N051101	1
CD604	122N041401	CORD,JUNPER	2N041401	1
CD801	068301036A	CORD EIS CONNECTOR	8301036A	1
CD802	122N032002	CORD,JUNPER	2N032002	1
CD803	122N052201	CORD,JUNPER	2N052201	1
CP004	1261000001	TERMINAL PIN	171255-1	1
CP101	0694140010	CONNECTOR PCB SIDE	2-171825-4	1
CP102	0694160019	CONNECTOR PCB SIDE	171825-6	1
CP103	0694120019	CONNECTOR PCB SIDE	171825-2	1
CP401	0693320029	CONNECTOR PCB SIDE	TV-50P-02-V1	1
CP403	0694140019	CONNECTOR PCB SIDE	171825-4	1
CP501	0693320018	CONNECTOR PCB SIDE	RTB-2.36-2TV	1
CP502	0694130019	CONNECTOR PCB SIDE	171825-3	1
CP601	0694FA0010	F-CHIP	163740-8	1
CP801	0693010010	CONNECTOR,PIN CENTER	RT-01N-2.3A	1
DY801	0274044F02	DEFRECTION YOKE	74044F02	1
JC801	0662310001	SOCKET,COVER CRT	HPS0110-05-010	1
K801	129T000004	WEDGE	TRI-26	1
K802	129T000004	WEDGE	TRI-26	1
K803	129T000004	WEDGE	TRI-26	1
MS002	128F000001	MICA SHEET	1S313B	1
SP350	0701031004	SPEAKER	EAS-8P01AC	1
S001	128F100003	SPACER	BUSH-M	1
TP001	126V000003	TERMINAL PIN	ITS-2035	1
TP002	126V000003	TERMINAL PIN	ITS-2035	1
TP004	126V000003	TERMINAL PIN	ITS-2035	1
TP006	126V000003	TERMINAL PIN	ITS-2035	1
TP007	126V000003	TERMINAL PIN	ITS-2035	1
TP008	126V000003	TERMINAL PIN	ITS-2035	1
TP009	126V000003	TERMINAL PIN	ITS-2035	1
TP010	126V000003	TERMINAL PIN	ITS-2035	1
TP011	126V000003	TERMINAL PIN	ITS-2035	1
TP012	126V000003	TERMINAL PIN	ITS-2035	1
TP013	126V000003	TERMINAL PIN	ITS-2035	1
TP014	126V000003	TERMINAL PIN	ITS-2035	1
TP015	126V000003	TERMINAL PIN	ITS-2035	1
TP016	126V000003	TERMINAL PIN	ITS-2035	1
TP017	126V000003	TERMINAL PIN	ITS-2035	1
TP021	126V000003	TERMINAL PIN	ITS-2035	1
TP022	126V000003	TERMINAL PIN	ITS-2035	1
TP023	126V000003	TERMINAL PIN	ITS-2035	1
TP024	126V000003	TERMINAL PIN	ITS-2035	1
TP025	126V000003	TERMINAL PIN	ITS-2035	1
TP026	126V000003	TERMINAL PIN	ITS-2035	1
TP027	126V000003	TERMINAL PIN	ITS-2035	1
⚠ V801	09245R5401	TUBE,CATHODE RAY	150CAB22	1

INTERCHANGEABLE PARTS LIST

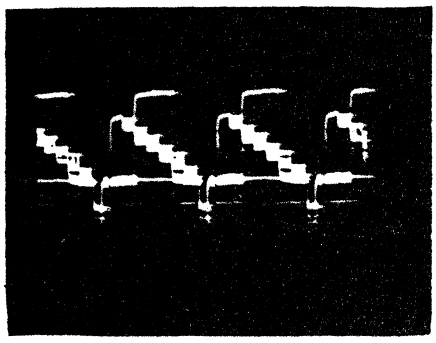
REF.NO.	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
IC402	I02990574J	UPC574J	I039956300	L5630
L615	03352R0064	16071	03352R0067	16071
L616	03352R0064	16071	03352R0067	16071
L619	03352R0064	16071	03352R0067	16071


CD001
Φ68M1CD4ΦA
VR604---EVUG5ABA0010
White
Glay
Glay
Blue
Yellow
Glay
Orenge
Glay
J350
HSJ0800-01-020
BRIGHT
SUB. BRIGHT
CONT
COLOR
V. HOLD
H. HOLD
SUB.
H. HOLD
SCREEN
VG2
TO
TUNER PACK
CD002
SPEAKER
SP350
CD103
IC350
TA7313AP
TO SECAM PCB
PAL/SECAM
AUTO COLOR
AFT
TV/VIDEO
J701 890R1004VC
VIDEO
AUDIO
IN
OUT
IN
OUT
TU101
EC-1E-0104
IC601
AU5620X
IC602
AN5612
IC401
LA7800
IC101
AN5700
IC402
μPC574J
IC501
M5231L
T401
1418MS
FB401
3705002
J801
HPS0110-01-210
TM0050A
TC0046A
TE0209A
TC0047A
TE0177A
PCB001
TM0050A
PCB002
TC0046A
PCB004
TE0209A
PCB003
TE0177A
SW301
SS5-322
VR301
VJ3013-2PVN10CB20KOHM
Min
Max
CD102
DY801
74044F02
CD403
V. SIZE
Q403
2SC945
Q402
2SB632
Q406
2SC2001
Q407
2SC945
F501
T 1.6 A
250V
J502
HECΦ47Φ-01-620
DC JACK
SW502
ESD-2764
NORMAL
CHARGE
R505
12 10W
SW401
DEG. SW
CD801
V801
150CAB22
CD401
DEGAUSS COIL
L405
8D5R5002
CD501
068332024A
POWER SW
SW501
TO BATTERY

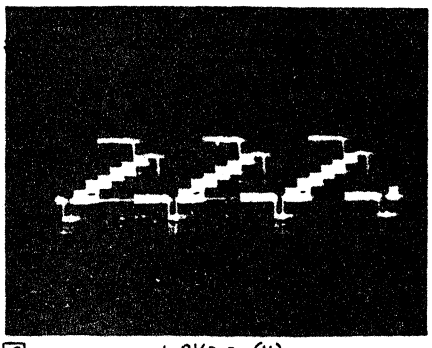
CTV-5X
I-3334



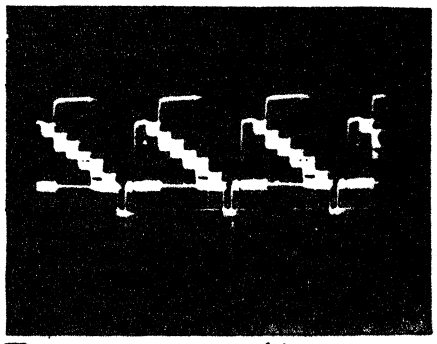
PCB005
TE0207A



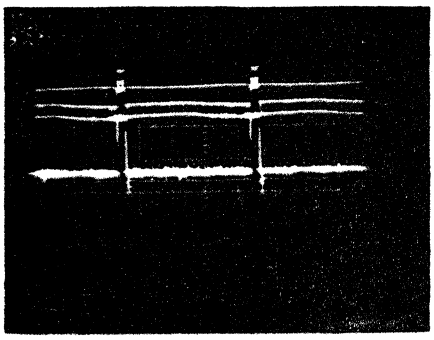
1 1.8VP-P (H)



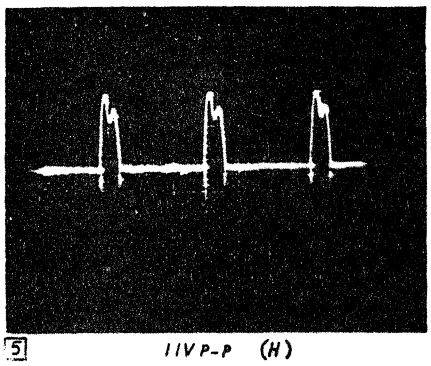
2 1.2VP-P (H)



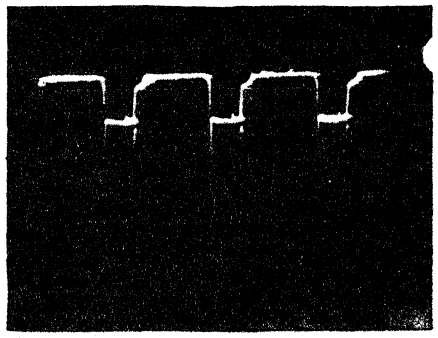
3 1.3VP-P (H)



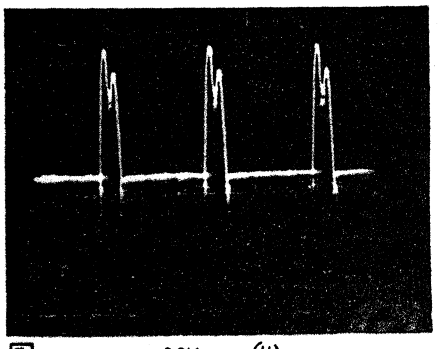
4 4.4VP-P (V)



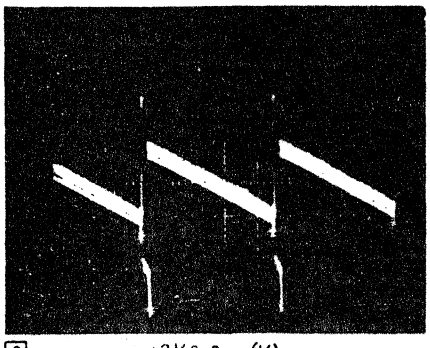
5 11VP-P (H)



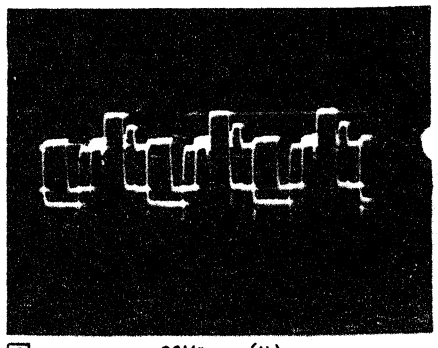
6 3VP-P (H)



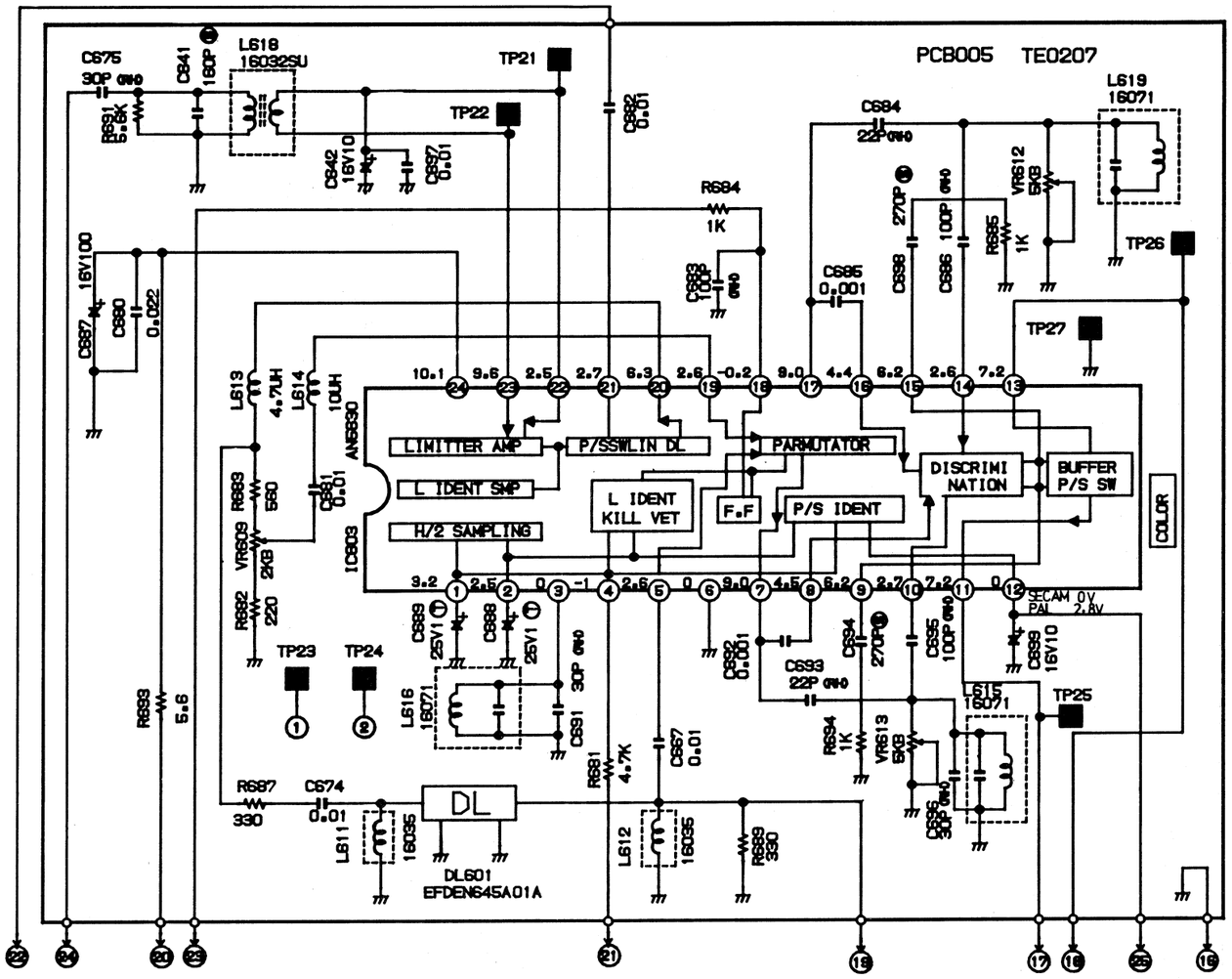
7 80VP-P (H)



8 12VP-P (V)



9 60VP-P (H)

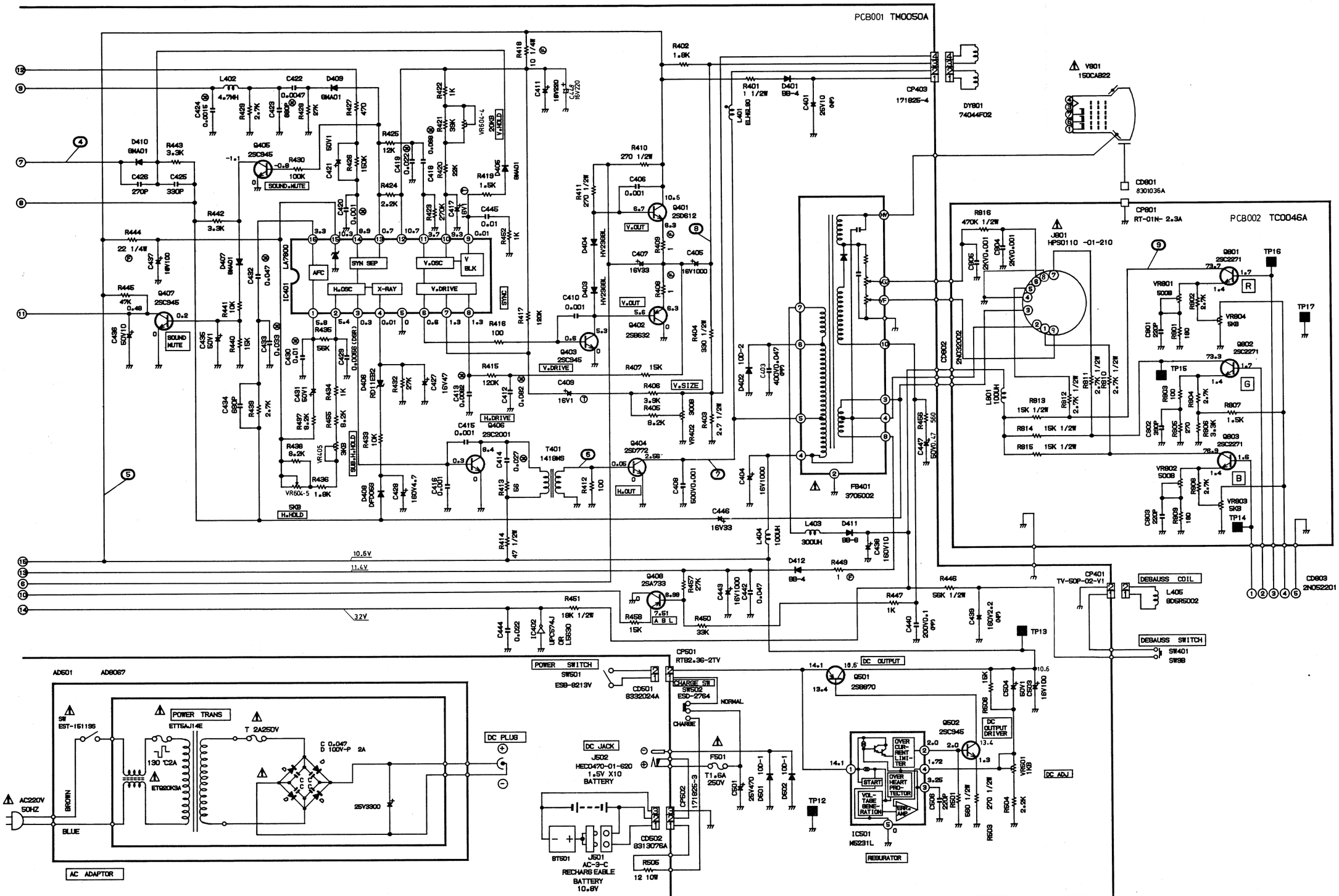


CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY , USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CTV-5X
2-2566



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY , USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

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CTV-5X

I-3333

IC101 AN5700

BAND	①	②	③	④	⑤	⑥	⑦	⑧	⑨
VH	28.9	11.4	10.4	5.7	0	0	11.8	11.8	32.7
VL	32.3	28.7	2.5	11.8	0	2.6	28.7	31.7	32.7

	Q101		Q102		Q103		Q104		Q105	
	VL	VH	VL	VH	VL	VH	VL	VH	VL	VH
E	11.9	0	32.7	32.7	7.0	0	0	0	0	0
C	11.7	0	28.3	32.7	0.04	0.02	0	0	32.4	17.6
B	11.1	0	32.7	32.1	0	0.7	0.7	0	0	0.7

ROD ANT
ANT001 T-2298
PCB004 TE0209A
TU101 EC-1E-0104
CP004 171255-1
CD003 8311150G2
ANT JACK 7604H
BU TU VH AGC VL AFT BM IF
VIF AMP
VIDEO AMP
RF AGC AMP
IF AGC AMP
AFT
DET
LA7503
LIMITER
L.P.F
LET
AUDIO AMP
ATT
LPC1392C
CD001 8M1CD040A
TP1
TP2
TP4
IC101 AN5700 VHF BAND SWITCHER
POSITION DISCRIME NATE VOL
DRIVE
AUXILIARY SWITCH
BS SWITCH
VOL. SW.
SW701-2 AFT SW ON OFF
SW701-3 TV/VIDEO SW TV VIDEO
Q701 2SC945 VIF KILLER
Q101 2SA733
Q102 2SA733
Q103 2SC945
Q104 2SC945
Q105 2SC945
Q703 2SC2274 VIDEO BUFFER
D701 6MA01
Q701 2SC945
Q702 2SC945
Q703 2SC2274
Q704 2SC945
VIDEO AMP
VIDEO OUT
VIDEO IN
AUDIO IN
AUDIO OUT
J701-1
J701-2
J701-3
J701-4
J701 890PJ004V0
SW701.SW702.SW601.SW603. ESB -621518
TUNING VOL.
VR101 EWH-BMA091B15 100KB
CD101 8M4071A
CP101 2-171825-4
SW301 SSS-322 UHF VHF
SOUND VOL.
VR301 VJ9013-2PVN10CB 20KB
CD102 8M16042A
CP102 171825-6
PCB003 TE0177A
EARPHONE JACK J350 HSJ0200-01-020
PF350 D9S310-65D223G
SPEAKER SP350 EAS-8P01AC 32 OHM
CD103 8312105A
CP103 171825-2
IC350 TA7313AP
CURRENT SOURCE
AMP
SOUND AMP
SUB COLOR
SUB CONT
SUB BRIGHT
AUTO COLOR
AUTO COLOR SW
SW701-1 ON OFF
VR604-1 VR604-2 VR604-3 BRIGHT CONTRAST COLOR
VR601 VR602 VR603 VR604 VR401 VR403 : EVU05ABA0010
10.6V 3.2V 11.4V
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.
ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB001 TM0050A
SECAM
PAL/SECAM SW.
X801 4.4MHZ
APC B-Y
KILLER ACC IDENT
H/2 SAMPLING
OSC
DEMOND
ADJ AMP
I+DL DRIVE
SAMPLING PHASE DET
DL MATRIX KILLER BLANKER
IC801 AN5620X
PFS01 LC973A2
B.P.F
COLOR
TP6
TP7
TP8
TP9
TP10
TP11
SERVISE SW.
SW602 SS-009-7H
NORMAL SER
DLS10 ELT-10Z466
COLOR DIFFER.
SATURAT COLOR CONT.
CLAMP
CLAMP PULSE
CRT CONT.
R-BR MAT BLK
IC802 AN6512
VIDEO
R G B

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I-3332